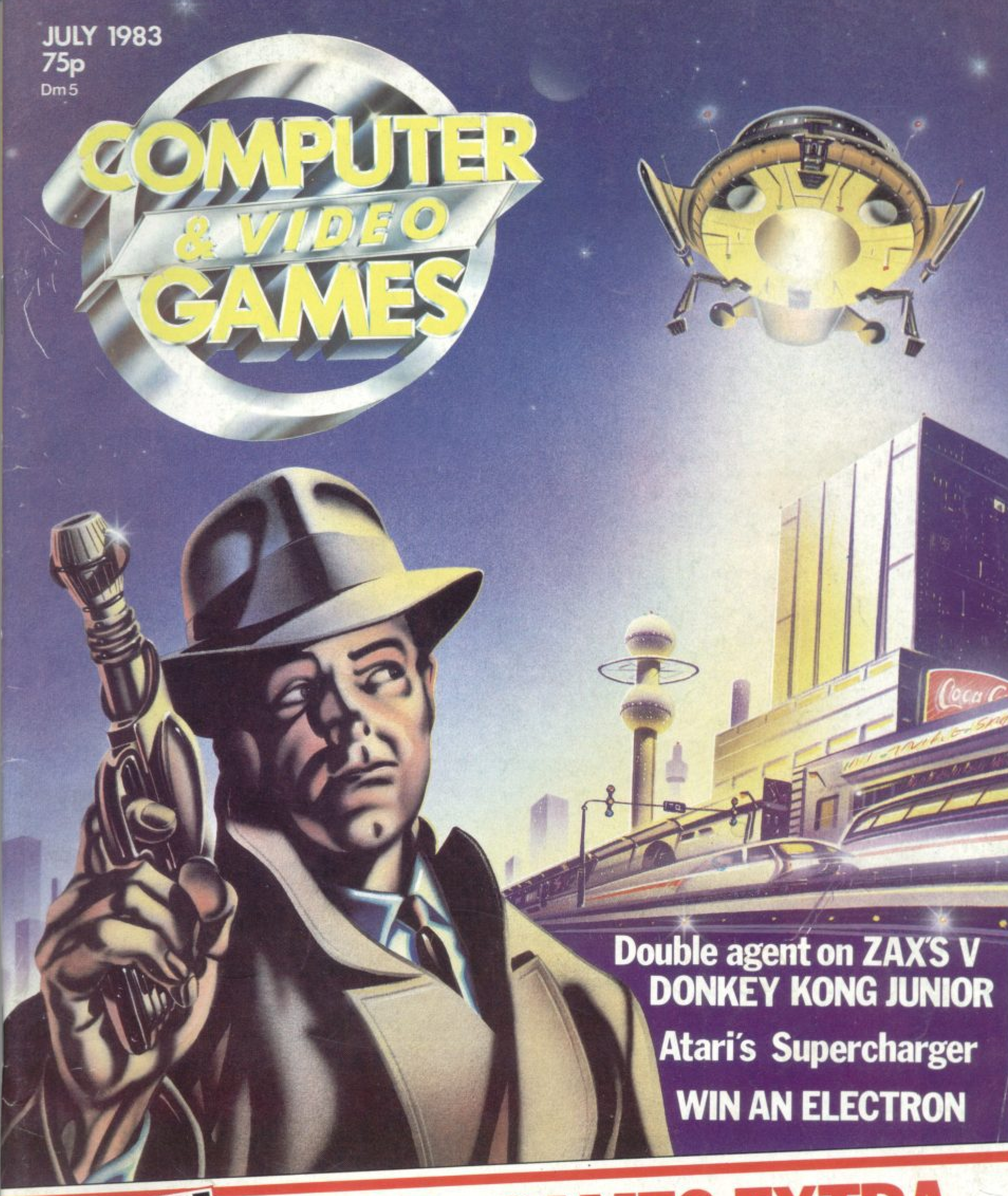


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Screen gems...

There's a new look to Video Screens this month. For a start we've changed its name to Video Gaming and we've boosted it up to four pages.

There you'll find news, competitions, a full page of reviews and a different feature every month: kicking off with the tale of the tail-less joystick. It starts on page 20.

Pure computer buffs won't be losing out though as we've added extra pages — 32 of them — devoted purely to listings, to keep *C&VG* the best listings magazine you can buy.

Donkey Kong and the brilliant 3D labyrinth will brighten up Spectrum owners' lives; there's 3D Road Race and Frogger for T.I. owners; Short Circuit on the Sharp and a host of other games for other computers.

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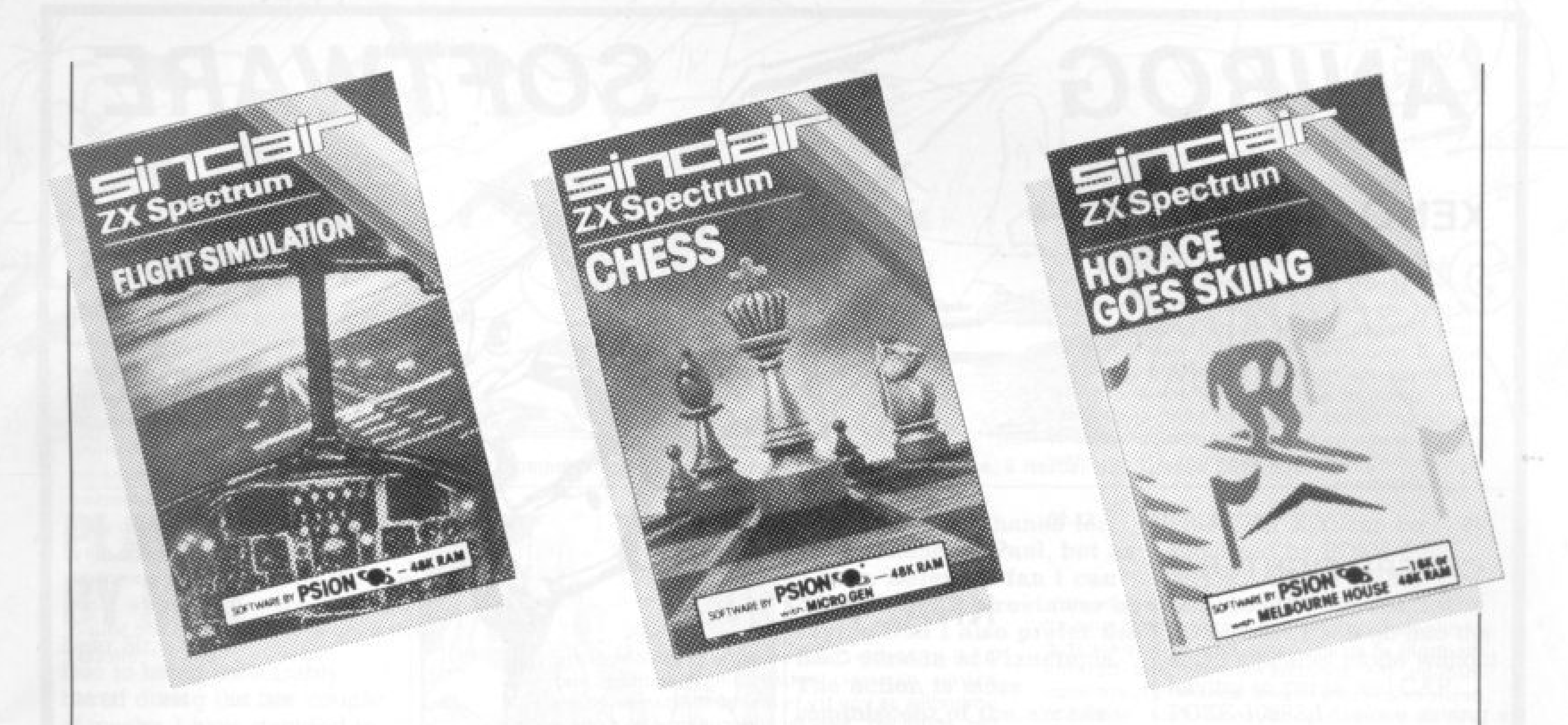
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How computers "see" the real world.

Editor Terry Pratt, **Staff writer** Eugene Lacey, **Editorial assistant** Clare Edgeley, **Reader services** Robert Schifreen, **Art editor** Linda Freeman, **Designer** Lynda Skerry, **Production editor** Tim Metcalfe, **Advertisement manager** Rita Lewis, **Advertising executives** Louise Matthews, Mick Cassell, **Advertisement assistant** Louise Flockhart, **Publisher** Tom Moloney

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Cover: **David Scutt** Next Issue: **July 16th**



THE W.H. SMITH SPECTRUM TOP TEN

Chosen from our vast range of software for the Sinclair Spectrum with particular reference to presentation, challenge, excitement and value for money.

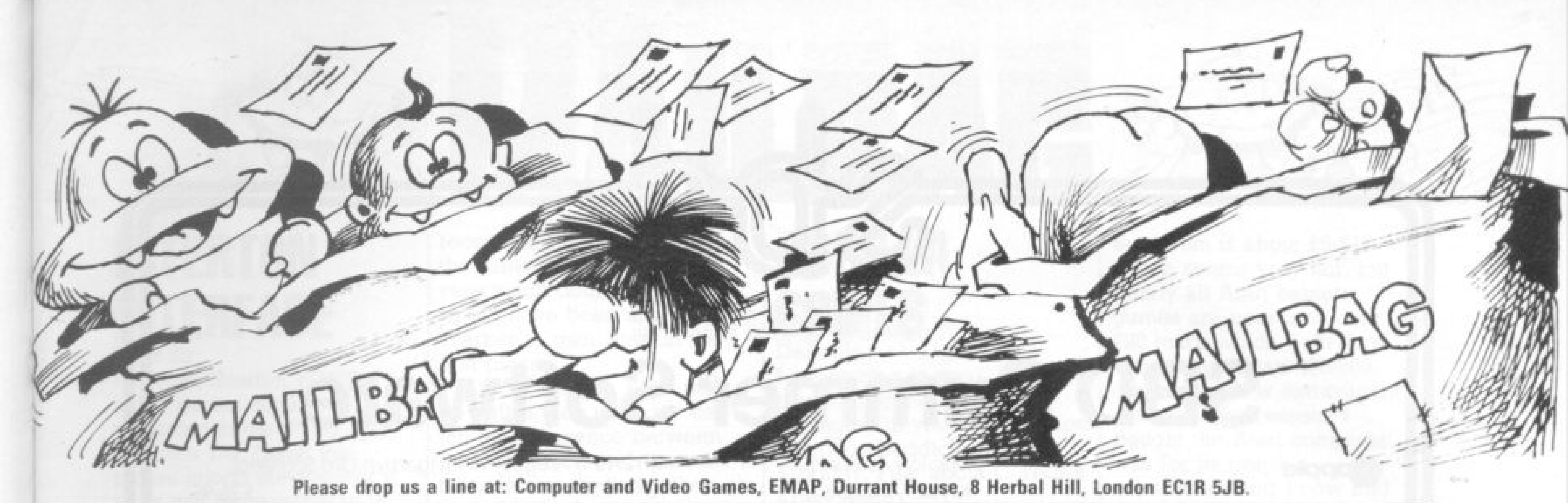
Title	Producer	K RAM	Price
Vu-File	Sinclair	16	£8.95
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Flight Simulation	Sinclair	48	£7.95
Vu-3D	Sinclair	48	£9.95
Hungry Horace	Sinclair	16	£5.95
Horace Goes Skiing	Sinclair	16	£5.95
Chess	Sinclair	48	£7.95
Jet Pac	Ultimate	16	£5.50
Penetrator	Melbourne House	48	£6.95
Sentinel	Abacus	16	£4.95

COMMODORE 64

Larger branches of W.H. Smith now also stock the Commodore 64 together with a wide range of the latest software.



Prices correct at the time of going to press. Subject to availability. At selected branches only.



Please drop us a line at: Computer and Video Games, EMAP, Durrant House, 8 Herbal Hill, London EC1R 5JB.

PLAYING BY MAIL

Dear Sir,
Due to being unbearably bored during the last couple of weeks, I have decided to take part in a play-by-mail game. I would be grateful if you could give me the addresses of people I should contact to get further information.
Steven Mill,
Broughty-Ferry,
Dundee.

Editor's reply: There are several games you can play, Steven. Starlord by Mike Singleton, 1 Rake Hey Close, Moreton, Wirral, Merseyside, Vorcon Wars by John Nicholson, 71 Juniper, Birch Hill, Bracknell, Berks. Or for free you can enter our own Seventh Empire play-by-mail game in the July issue.

LOW COST SPECTRUM

Dear Sir,
I have just read that the ZX Spectrum will be going down in price. Does this mean that it will now be cheaper to convert my 16K Spectrum to 48K?
Simon Gill,
Bellbroughton,
West Midlands.

Editor's reply: The price of the Spectrum goes down from May 2 1983. A 16K Spectrum will cost £99.99, making it the first under-£100 colour micro to be available. The 48K model is reduced to £129.99. The cost of an upgrade to 48K is reduced from £60 to £40.

Orders for a Spectrum placed by mail order after April 7 were frozen, so if you ordered a Spectrum after that date you should be receiving a refund.



DEFENDER DEFENDED!

Dear Sir,
As a proud Atari 800 owner I must complain strongly on your review of the Defender cartridge for this machine.

According to me, the graphics are spectacular for the 16K program and equal to those of Acornsoft's 32K Defender program (Planetoids) for the much over-rated BBC in every way.

There is no question of which is easier to play because playing with six keys at once on the BBC keyboard is impossible.

Lastly, on the question of the best quality software, it is known in every home computer selling nation that the Atari has the most and certainly the best quality software of any available computer and it does not only come from Atari Inc. but from a variety of companies.

It is not like the BBC where you are restricted to Acornsoft software if you want programs of any reasonable quality.
Paul Ippaso,
Barrow-on-Soar,
Leicester.

Editor's reply: Thanks for your comments Paul, but as a keen Defender fan I can only defend my reviewer by saying that I also prefer the BBC version of Planetoids. The action is more reminiscent of the arcade original and the screen scrolls more neatly.

Also you don't mention the fact that Atari's Defender is much more expensive than Planetoids.

Still, perhaps we have all been spoilt by arcade Defender anyway.

SPECTRUM STICKS?

Dear Sir,
Can you get joysticks for the Spectrum?
M. Law,
Sutton Coldfield,
West Midlands.

Editor's reply: There are many companies selling joystick interfaces for the Spectrum. Try Fuller, Kempston or AGF Wardware. A Spectrum Joystick review soon.

LOCATIONS, ROUTINES. . .

Dear Sir,
I am writing to tell you about some useful memory locations and routines which may be of some value to those of your readers who own a Sharp MZ-80K. They are listed below.
POKE 10167,1 removes the PEEK protect from Sharp Basic.
Type SG when you switch on and a beep will sound when you hit a key.
Type SS and the beep will stop.
POKE 59555,0 will blank the screen whilst retaining anything on it and POKE 59555,1 will reactivate the screen.
PRINT AT X,Y; can be simulated by POKE 4465, X:POKE 4466, Y:PRINT "character".
POKE 4464,1 will go into the small alphabet mode without having to press sml/CAP.
POKE 10682,1 before saving a program will cause the program to run automatically after loading.

The location of the keyboard buffer is 17828, but this only holds the ASC11 number of the key being pressed if GET is issued before hand, thus GET A$:A$=CHR$ (PEEK(17828)) can be used in a program so that movement of your ship or whatever is continuous.

Finally to make a security copy of Sharp Basic, simply load the Basic and type POKE 10167,1: USR(33): USR(36) and hit CR.
Ian Clarke,
Stoke on Trent,
Staffordshire.

REVERSI REQUEST

Dear Sir,
I think it was in the March 1982 edition that Gordon Stevens gave us an excellent Reversi (Othello) program for the ZX81.

However, this used some machine code and peeks for which there does not seem to be direct Spectrum equivalents.

Any chance of a Spectrum "conversion kit" for this very good program? I want to try to beat the swine!!
G. N. Thorne,
Welwick,
Hull.

Editor's reply: I suggest that you try and get hold of a ZX81 manual with all the system addresses in. Most of the variable names are the same as those for the Spectrum, and it's simply a matter of replacing the locations.



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MAILBAG



INTERTON INTERFACE

Dear Sir

I own an Interton VC4000 video games console marketed in the UK by Hanimex Ltd. Could you please inform me whether it is, or will be, possible to in some way connect (via an interface or other means), the console handsets to the Sinclair ZX Spectrum which I have just purchased.

Gary Wilson,
Colchester,
Essex.

Editor's reply: Most of the joystick interfaces sold are sticks with two potentiometers inside. If the Interton sticks are this type, then its just a matter of making sure that the wires go to the correct pins. Details should be provided with each interface.

ATTACK ON ATARI!

Dear Sir,

After reading your current issue I find myself with enough material for four or five letters. I'll try and cram the lot into one. Lucky you.

BBC v Spectrum. All your well heeled correspondents with Model Bs seem to have missed the point of the original letter which was — if £399 is all you have to spend then a Spectrum plus peripherals is better value than a BBC with none.

I believe the letter then went on "and ITV make the best TV programs in the world."

Actually the best TV programs on ITV are shown on Channel 4. Draw your own conclusions.

Atari v Colecovision. When Atari were flinging writs at Activision, their excuse was that software was where the money was and they wanted to protect their markets.

I would have thought the Coleco/Atari adaptor was extremely unlikely to detract from Atari's sales.

One therefore concludes that they have a vested interest in keeping their legal dept. overworked.

Incidentally,ifthepioneersof record and film had adopted the same attitude as Atari, I very much doubt if there would have been any Bros. Warner to own Atari in the first place.

Atari v Imagic. Atari must be daft if they think we can't tell the difference between Demon Attack and Phoenix. If there is any similarity then it's probably because they can't fit arcade Phoenix into the Atari's memory.

What's more, I'm getting sick and tired of Atari chucking writs at everybody. If they don't cut it out, I'm not going to buy any more of their products. Intellivision cartridges are cheaper anyway. So there.

Interesting bit of news that. Just one thing. Didn't I write and tell you about them six or seven months ago?

Deke Roberts,
Temple Cowley,
Oxford.

Editor's reply: But we had to wait until they were about to come out Deke! Still, thanks for your views.

WE NEED REVIEWERS

Dear Sir,

I have recently upgraded my Spectrum from 16 to 48K and am now ready to take on the gaming world.

Being a regular reader of your magazine, since long before I ever persuaded the powers that be to buy me my first computer, I am writing to see if you need any more help in compiling your reviews section or testing games.

I have a printer and will be pushing for the marvellous microdrive as soon as it appears.

Rebecca Calwell,
Edgeware,
Middlesex.

Editor's reply: Yes Rebecca, we can make use of your talents we are still finding we have more tapes than our current resources can cope with on four microcomputers. These are the Spectrum, Vic-20, Dragon 32 and BBC. If anyone out there is interested please write with details of the equipment you own.

GORILLA GRIPES

Dear Sir,

I am writing to you concerning the letter you published in your May edition from Iain Reddick of Kirkaldy, Fife, about C Tech's Krazy Kong.

I would just like to say that I totally agree with him. I also believe that the advert is meant to be misleading.

Sometimes I find it impossible to load the 48K version, but when I do I never seem to be able to reach the final stage as every time I complete a stage I lose a life and, I assume, return to the beginning. Could this be a bug?

The game is very very fast and definitely unplayable. I too waited for over a month for my copy to arrive and have also decided to return it to C Tech with a letter of complaint.

M. Yates,
Ilkeston,
Derbyshire.



OVERPRICED CARTRIDGES

Dear Sir,

I am writing to complain through you to some of the large Atari 400/800 software producers. I have had my computer for about nine months and have only been able to purchase two games cartridges due to the really high prices that are charged for these items.

The price for a cassette game for any other computer such as the Vic-20 or ZX Spectrum is about £5-£10 which seems very fair, but nearly all Atari cassette games are nearer or over the £20 mark which I am sure many other Atari 400/800 owners think is extravagant.

One of the reasons I bought the Atari computer was for its graphic capabilities and I now find that I can't afford games at these prices.

Have you or any other Atari 400/800 owners any views on the matter? I think the Atari computers have been out long enough for games prices to be lowered considerably.

Eddie Mitchell,
London,
NW9.

Editor's reply: Thanks for your comments Eddie. I agree that Atari software is not so superior to other micros that it justifies these large prices. Perhaps other Atari owners will give us their views.

AMPLIFIED SPECTRUM

Dear Sir,

I am an owner of a ZX Spectrum and find that the sound or lack of it irritates me more than anything else. But now I have discovered a way of amplifying the sound through the cassette recorder. The sound coming from the computer is still present but additional sound comes from the cassette recorder.

To amplify the sound through the cassette recorder, the Spectrum's ear plug should be plugged into its socket on the machine. The other earplug should be plugged into the MIC socket of the cassette recorder.

The cassette recorder is then set to play and, then PAUSED via a pause button on the cassette recorder. The sound output from the cassette recorder can now be controlled using the volume control.

This ability to increase the Spectrum sound improves all games where sound plays a prominent part and at times can even improve scores.

Sarbjit Gidda,
Spondon,
Derby.

VOTE FOR OUR FIVE GOLDEN JOYSTICKS

Five Golden Joysticks are the treasured prizes which British software houses will be competing for this autumm.

Computer & Video Games is sponsoring the Golden Joysticks Awards which we hope will become the Oscars of our games industry.

This is your chance to nominate a company which has given you good service or earn due recognition for a game which has provided hours of enjoyment.

We feel our industry is crying out for quality games to be rewarded and hope it will give our software houses something to aim for when they feel they have come up with a winning idea.

In America the Arkies Awards tend to go to US software companies and we felt it was time that the best of British was given the chance to prove itself.

A *C&VG* Golden Joystick will be awarded in five categories and announced during the Brainwave consumer electronics exhibition in November.

The five Joysticks will be awarded as follows:

Best Arcade-style Game goes to the cassette or cartridge which proves itself the most addictive and thrilling game in 1983.

Best Strategy Game is the title bestowed on the finest cassette or cartridge to test the mind rather than the trigger-finger.

The Best Original Game Idea is an award close to the heart of anyone who has written as many Pacman reviews and news stories as I have. I hope the award inspires companies to introduce new ideas.

Software House of the Year goes to the company which has won itself the best reputation for service, quality game and entertaining adverts.

And finally the *Game of the Year.* The most coveted Golden Joystick awarded to the game which most impresses the judges.

Initially we are leaving the judging up to you and want you to tell us your nominations in any or all of the categories. Don't feel you have to fill in a category where you have not seen anything worthy.

For the title Software House of the Year, we will check out your suggestions with the dealers and also set some devious tests on the service side for the main contenders.

And while the other Joysticks can only be won by British-based companies, we are leaving this category open to overseas distributors.

We want your nominations in as quickly as possible. So please cut out the form below, fill in those categories where you feel strongly that a company deserves an award and send it off to: The Golden Joystick Awards, *Computer & Video Games,* Durrant House, Herbal Hill, London EC1R 5JB.

Please accept the following nominations for the Golden Joystick Awards.

(BLOCK CAPITALS PLEASE)

1) Best Arcade Type Game: ....

By (Software house): ....

2) Best Strategy Game: ....

By: ....

3) Best Original Game: ....

By: ....

4) Software House of the Year: ....

5) Game of the Year: ....

By: ....

Name: ....

Address: ....

....

SPACE, THE LATE FINAL CROSSWORD!

High scores abounded on the Delta Rocket to Venus as the crew whittled away at the headline of the last newspaper they saw on Earth.

Since Trevor Truran launched the flight and the competition in our May issue, pictures of the ACME Spaghetti rocket filled with words reduced from the headline "Major Venus Flight" have been soaring into the office.

Top scorer was Mrs J Dixon of Glebe Road, Wickford in Essex with 1,260. Close on her heels was Gavin Copeland of Ceder Road, Ayre with 1,200 and K Austin of Meades Lane, Chesham Bucks with 1,180.

To these three we are sending a Milton Bradley board game.

We are undertaking to provide games cassettes for your home computer if you can beat Trevor Truran's devious dice problem on page 96 of this issue.

We can't promise to provide your first choice cassette but we'll do our best. Please, include details of which game for which computer you would like as a prize.



THE ELECTRONS ON FOR BUG-BYTE

If you'd seen as many space invaders come and go as our Bugs have, you too would be longing for a new kind of game.

They've been haunted by the ghosts of long dead Pacmen until they were sick of power pills; swooped on by untold Galaxians and Scrambled more craft against mountainsides than they care to remember.

At a recent meeting of the League of Blasted Bugs, it was unanimously decided to get right to the heart of the problem of original computer games ideas by asking *Computer & Video Games* readers to write in and tell us about the games they would like to see on their computers. Give your ideal game a title and that all-important theme.

Explain how the game would run, the objectives and where the skill comes in.

And who better than Bug-Byte, one of Britain's best established computer games companies to act as patrons for this foray into unexplored gaming territory.

Liverpool based Bug-Byte are so keen to pave the way for a new breed of games that they have undertaken to put up an Electron computer — the long-awaited new offering from Acorn Computers — as a prize for the best idea.

They will also throw in any attendent software which accompanies the proposed July launch of the Electron.

Acorn's early promises for the Electron include: BBC Basic, compatible with the BBC computer; a standard typewriter keyboard; 32K of RAM memory; eight colour graphics; two character ranges of either 20 or 40 characters per column down 25 rows; a screen resolution of 320 × 200 pixels for detailed graphics; and a fully programmable sound generator.

The prize goes to the writer of the best *new* games idea we receive into the *C&VG* offices by July 16th. An added bonuse, if any of the top 20 entries are considered good enough by Bug-Byte, is that they will produce and market the game, paying royalties to the authors.

As runners-up prizes, five entrants will be offered two software cassettes from the Bug-Byte range of BBC, Spectrum, ZX81, Oric and Vic games. See the panel below for details of how to enter and the competition rules.

ARTIFACTOR COLLECTS

Arkrai the artifact collector was the winner of the free *C&VG* play-by-mail game of Starweb.

The game came to a close this month when Arkrai went above the desired number of points to claim victory over the 14 other empire builders, berserkers, pirates, apostles and merchants that peopled the Starweb galaxy.

A full report from one of the vanquished next month on *C&VG*s competition pages.

HOW TO ENTER OUR ELECTRON CONTEST

To win Bug Byte's Electron, send your games idea in with a title and the themes.

Let us know what sort of game it is and go into extra detail if it doesn't fall into the usual categories.

Remember we are looking for originality so try to give your game a new twist. A picture of the screen display might help our judges to get a better idea of the game, but it isn't necessary. Please don't skimp on the detail, the more you explain how it works on the computer the better.

Send it to: The Electron Competition, Computer & Video Games, Durrant House, Herbal Hill, London EC1R 5JB.

All entries will be the property of Bug-Byte and they reserve the right to develop and market the idea on a royalties basis. No employees of EMAP, Bug-Byte or their relative may enter the competition. The judges' decision is final and no correspondence can be entered into.

The closing date is the 16th of July and please ensure that all your pieces of paper include your name and address.

spectrum

NEWS from SPECTRUM

Sensational TEXAS OFFER!

Fantastic reductions & offers on the TEXAS TI-99/4A see our ad. on next double page for details.

PRESTEL

See PRESTEL Page 600181 for up to date information from SPECTRUM

NEW SPECTRUM MEMBERS

Check our address page! - there are many new **SPECTRUM** dealers throughout the UK so there's a good chance there'll be a **SPECTRUM** centre near you.

VIC-20 Package Offer!

A sensational package offer on this top selling micro. A complete computer system for only £139.99 - see our advertisement for full details.

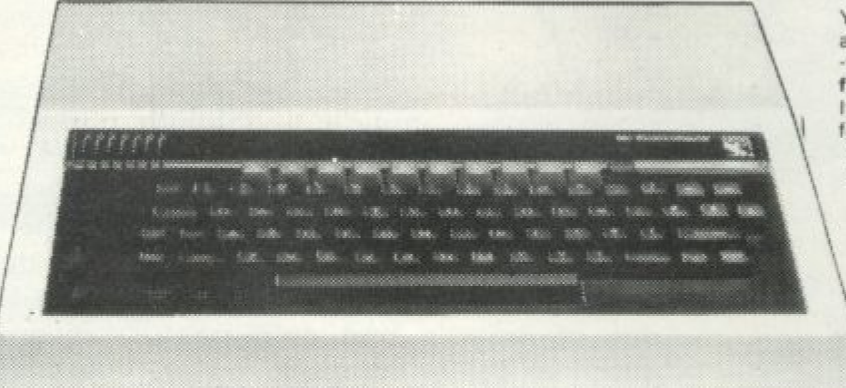
AFTER SALES CARE

SPECTRUM service centres will ensure that should your machine 'go down' **we will get it running again as quickly as possible.** We also offer **extended warranties** at reasonable prices too! - ask your **SPECTRUM HOME COMPUTER CENTRE** for full details.

COMPUTER DEALERS

The **SPECTRUM** dealer list is virtually closed. If your area is free and you'd like to join the waiting list, please write to **MIKE STERN, Spectrum (U.K.) Ltd, Burrowfields, Welwyn Garden City, Herts.**

BBC Model 'B' MICRO



Yes, this **top selling Micro system** is now available from your local **SPECTRUM** dealer -the **BBC Model'B'** offering **32K RAM** plus a **full back-up** of **peripherals** & **software** too! It's an **infinitely expandable** machine, ideal for the **home or business** and is already widely used for **educational purposes in schools** -so the chances are **your** children may already be **well familiar with its operation,** which must make it the **ideal choice** for the **home** too! So if you're thinking of buying a micro you **must** take a look at the **BBC** at your local **SPECTRUM** dealer **NOW!** - but just one word of warning, initially stocks will be limited and **demand is bound to be great,** so please 'phone to check the stock position before making a journey.

BBC 'B' with Disk Interface	£470.50
BBC Disk Interface Kit	£95.00
BBC Single Disk Drive 100K	£265.00
BBC Dual Disk Drive 800K	£803.85
BBC Tape Recorder	£29.90
BBC Acorn Software Cassette based from	£9.95
BBC Disk based software	£11.50

Spectrum Price

£399.00 INC. VAT

Please Note!

We regret that there is a tremendous shortage on all BBC equipment — please phone your nearest store before making a journey to check stock position.

SHARP MZ-80A



Desk top genius! the all-in-one SHARP MZ-80A. Ready to run the moment you get it home. Built-in keyboard. CRT. 9" display and cassette data storage with **48K RAM**. The BASIC with extra useful additions, offers quite a powerful micro for the home or business. ■ 4K Byte ROM 48K Byte RAM · 2K Byte Video RAM ■ ASCII profiled keyboard · numeric pad ■ 2page Video RAM allows screen to be scrolled up or down. ■ CP/M available.

Spectrum Price £546.25 Inc. VAT

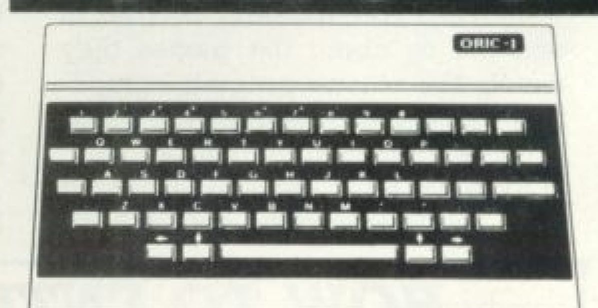
Floppy Disks and Accessories for MZ80A

Twin Floppy Disk unit (inc. 1/0 Card, Disk, Cable) £856.75
Twin Disk Unit (only) £678.50
Single Floppy Disk Unit .. £460.00
Cable for F/D Drive £29.79

Printers and Accessories for MZ80A, MZ80B & MZ80K

80 Col Tractor Feed Printer inc. Cable, 1/0 Card & Rom £477.25

ORIC-1



A superbly designed and engineered micro and great value-for-money from **SPECTRUM.** Offering **48K RAM Colour** - (8 foreground and 8 background can be displayed at same time) **High resolution graphics User definable Graphics. Full sound** (6 octaves of controllable sound) **Easy to use keyboard with moving keys. Standard Centronics parallel interface allows** easy connection to a wide range of printers etc

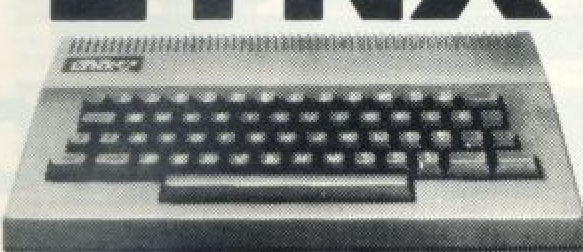
Spectrum Price £169.95 Inc. VAT

SPECTRUM FACTS

Maximum user RAM	47,870 Bytes
Text screen	28x40
High Resolution	240x200
Cassette Lead	Included

Not all stores carry every advertised item, please phone before making a journey — Prices correct at time of going to press E. & O.E.

The powerful and infinitely expandable LYNX



Just look at this **super new LYNX Micro - an incredible** 16K & 32K video ram and that's expandable up to or beyond 96K. For just **£225.00 INC VAT** the **LYNX is exceptionally versatile.** All **LYNX's** 'add-on' connections are **standard types.** The high definition **colour graphics** make it a **top value choice** for the **home or office** (with expansion, the **LYNX** can become an 80 characters-per-line word processor!) Take a look at the **LYNX** - a memorable bargain from **SPECTRUM.** But please phone to check stock position before making a journey as this machine is bound to be in **great demand.**

Spectrum Price

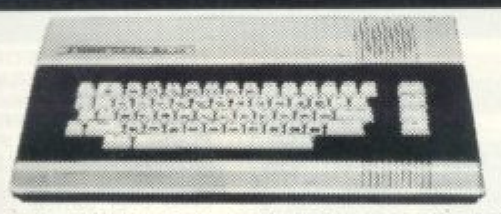
£225.00 Inc. VAT

VISCOUNT - Teach yourself LYNX BASIC **£6.95**

SPECTRUM FACTS

Maximum user RAM... 13,700 Bytes (approx)
Text Screen.......... 24 x 30
High Resolution... 265 x 248
Cassette Lead...... Included

COLOUR GENIE



A truly reliable micro and highly recommended by **SPECTRUM** featuring powerful and sophisticated COLOUR GRAPHICS, allowing you to create full 8-colour Games, Diagrams and charts quickly and simply. Powerful 16KK RAM memory (expandable internally to 32K) for FULL COLOUR video games and POWERFUL COMPUTING with a full range of inexpensive accessories: 16K RAM pack, Joysticks for TV games, Light Pen, Disk Drive and a Printer. The superb Colour Genie is at SPECTRUM now - check it out and see the Genius at work!

NEW Low Price £194.00 Inc. VAT

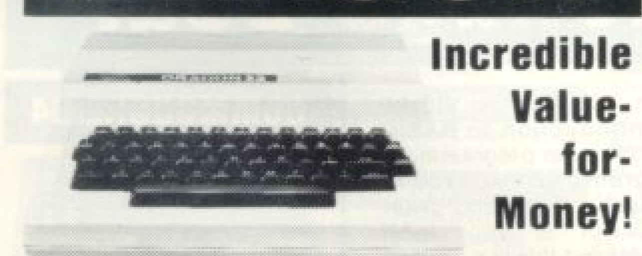
COLOUR GENIE ACCESSORIES

Joysticks	£49.49
16K RAM	£38.50
Printer Interface	£39.95
VISCOUNT Teach yourself Colour Genie Basic	£6.95

SPECTRUM FACTS

Maximum user RAM	**14,200 Bytes (approx)**
Text screen	**24x40**
High Resolution	**320 x 192**
Cassette Lead	**Included**

DRAGON



Incredible Value-for-Money!

Extensive facilities include highly advanced colour graphics. Powerful standard 32K RAM (expandable to 64K Bytes). ● 9 Colour 5 resolution Display ● Extended Microsoft colour BASIC (as standard) ● Advanced sound with 5 octaves 255 tones

SPECTRUM FACTS

Maximum user RAM	29,679 Bytes
Text Scren	16 x 32
High Resolution	256 x 192
Cassette Lead	Included

VISCOUNT Teach yourself Dragon Basic £6.95

Spectrum Price only £175.00 INC. VAT

SINCLAIR ZX SPECTRUM



Yes, this top selling micro is now available from Spectrum in both **16K** and **48K RAM**. So now there's no need to send by Mail Order - just call into your local SPECTRUM dealer and pick one up. But just one word of warning: with this added avilability advantage, stocks are bound to sell fast - so make it soon!

SINCLAIR ZX SPECTRUM 16K - £99.95
SINCLAIR ZX SPECTRUM 48K - £129.95

Spectrum Computer Centres have no connection whatsoever with the ZX-Spectrum Computer manufactured by Sinclair Research Ltd.

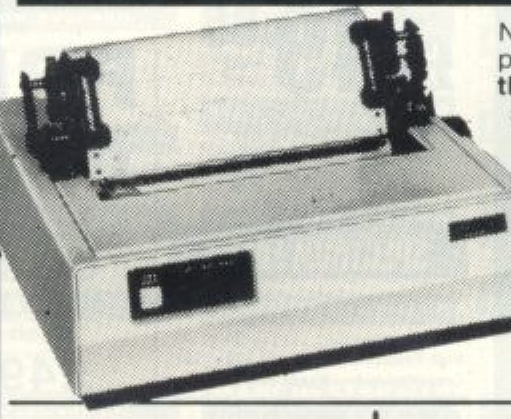
SINCLAIR ZX-81

SINCLAIR ZX £49.95
16K RAM pack . . . £29.95
ZX Printer £39.95

Computer Bookshop Software for Sinclair Computers	INC. VAT
Bumper 7 1K ZX81	£5.95
1K Super Trio ZX81	£7.95
Labyrinth 16K ZX81	£5.95
Nightmare Park/Music 16K ZX81	£6.95
Computacalc 16K ZX81	£7.95
Personal Banking System 16K ZX81	£11.44
Space Invaders/Rescue 16K ZX81	£6.95
Breakout 16K ZX81	£5.95
Mugsy 16K ZX81	£5.95
Mergatroyds 16K ZX81	£5.95
Progmerge 16K ZX81	£5.95
Football Manager 16K ZX81	£7.95
Cassettes for ZX81 Type—10	
6 Games	£3.95
Junior Education	£3.95
Business & Household	£3.95
Skill & Judgement Games	£3.95
Junior Education	£3.95
Family Quiz	£3.95
Type—20	
Fantasy Games	£4.75
Space Raiders & Bombers	£4.75
Type—30	
Super Programs Nos. 1-8	£4.95
Type—40	
Backgammon	£5.95
Flight Simulation	£5.95
Type—50	
English Literature 1	£6.95
English Literature 2	£6.95
Geography	£6.95
History 1	£6.95
Maths. 1	£6.95

ZX-PANDA 16K RAM PACK ONLY £24.95

OKI MICROLINE Printers



Now from **SPECTRUM** - this **top selling** range of printers **renowned throughout the world for their quality and reliability.** If you're thinking of adding a printer to your micro then you must take a look at the **MICROLINE** range at **SPECTRUM -NOW!** they're **fantastic value-for-money**

Models available

MICROLINE Model 80 £259.90
MICROLINE Model 82A £455.40
MICROLINE Model 92P £585.35

EPSON



The new **EPSON RX-80** and **FX** printers now available—check with your local **SPECTRUM** dealer **NOW!**

FX-80 Spectrum Price **£503.70**
RX-80 Spectrum Price **£332.35**

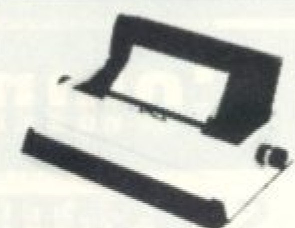
SEIKOSHA



GP-100A

Now a top quality graphic printer at a price you can afford. Centronics interface connects easily with most micros.
Spectrum price **£229.94** Inc VAT Cables & Interfaces available for most micros

SMITH CORONA



Model TP-1

Microprocessor controlled, high quality daisy wheel printer at a LOW cost from SPECTRUM. Serial, Parallel or IEEE Interface.
Spectrum LOW price **£557.75** Inc. VAT

BOOKS

SELECTION FROM THE COMPUTER BOOKSHOP

30 Hour Basic for the BBC Micro	£5.95
Let your BBC Micro Teach You to programme	£6.45
BBC Micro Revealed	£7.95
Over the Spectrum	£6.95
60 Games and Applications for the ZX Spectrum	£4.95
Programming the 6502	£9.95
Programming your ZX Spectrum	£6.95
ZAP Pow Boom for the Vic 20	£7.95
The ZX Spectrum Explored	£5.95
Vic Inovative Computing	£6.95
Mastering Machine Code on your Zx81	£7.50
The ZX Spectrum and how to get the most from it	£5.95
Easy Programming for the ZX Spectrum	£5.95
30 Programmes for the BBC Micro	£4.95
CPM Handbook	£11.50
Programming the Z80	£11.95
20 Best Programmes for the ZX Spectrum	£5.95
Getting aquainted with your Vic 20	£6.95
Machine code and Better Basic	£7.50
The Cambridge Colour Collection (Spectrum)	£6.95
Vic Revealed	£10.00
De RE Atari	£17.00
ATARI Operating system listing	£10.43

MORE SPECTRUM LOW PRICES! ☞

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A few examples from our

SOFTWARE Selection

from independent software houses

THORN EMI

Software for ATARI	Inc. VAT
Submarine Commander	£34.44
Jumbo Jet Pilot	£34.44
Soccer	£29.84
Kickback	£29.84
Home Financial Management	£19.49
Darts	£19.49
Snooker & Billiards	£19.49
Pool	£19.49
Cribbage & Dominoes	£19.49
Cupute 4 & Reversi	£14.89
Mutant Herd	£24.25
Software for Commodore	
River Rescue	£25.24
Vic Music Composer	£25.24

GEM

Software for ZX81, Dragon and Spectrum	Inc. VAT
Monster Mine (for ZX81)	£4.95
Monster Mine (for Spectrum)	4.95
Monster Mine (for Dragon)	7.95
Space Mission (for ZX81)	£4.95
Space Mission (for Spectrum)	£4.95
Space Mission (for Dragon)	£7.95
Dragon Golf	£7.95
Dragon Character Generator	£9.95

SALAMANDER

Games for Dragon 32	Inc. VAT
Dragon Trek	£9.95
Wizard War	£7.95
Vulcan 0	£7.95
Games Compendium DI	£7.95
Golf	£7.95

RABBIT

Software for Commodore VIC20	Inc. VAT
Space Storm	£6.99
Ski Run	£4.99

Dune Buggy	£4.99
Super Worm	£4.99
Jungle	£4.99
Cosmic Battle	£4.99
Frogger(3K)	£4.99
Rabbit Functions	£4.99
Code Breaker	£4.99
Night Fight (3K)	£4.99
Rabbit Writer (16K Cassette)	£19.99
Rabbit Base (16K Cassette)	£14.99
Myriad (3K)	£9.99
Charset/20 (3K)	£4.99
Skramble	£9.99
Space Phreeks	£9.99
Night Crawler	£9.49
Hopper	£9.99
Tank War	£7.99

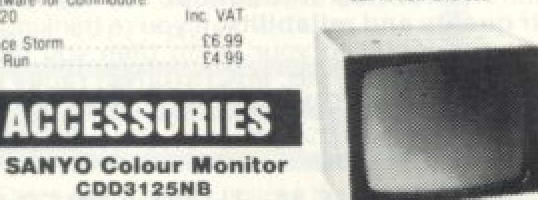
KUMA

Software for Sharp	
Electron 22622	£9.20
Cribbage	£12.08
Adventure	£12.08
Chess	£16.68

AUDIOGENIC

Programs for VIC-20	Inc.VAT
Amok	£6.95
Alien Blitz	£7.95
Golf	£7.95
Spiders of Mars	£19.95
Sattelite & Meteorites	£19.95
Bonzo	£7.95
Trashman	£19.95
Boss	£14.95
Tank Attack	£19.95
Word Craft Word Processing package	£125.00

Plus many more at your local SPECTRUM dealer -call in now and see!



ACCESSORIES

SANYO Colour Monitor CDD3125NB

£286.35

SANYO	Inc. VAT
SANYO 12" green monitor	£113.85
Slim 3G Cassette Recorder	£29.95
C12 Cassettes	£0.50
Single sided double density disks (Box of 10)	£21.25
Double sided, double density disks (Box of 10)	£33.81
Disk head cleaner	£16.10

Single part 11" x9½" printer paper, box of 2,000 sheets	£13.05
VIC Accessories from Viscount	
Motherboard without Buffer	£24.95
Motherboard with Buffer	£29.90
16K RAM Pack	£43.95
32K RAM Pack	£66.95
64K RAM Pack	£114.94
Adman Chatterbox Voice Synthesiser	£57.45

Fantastic! NEW LOW Price

ATARI 800

Now this proven and tested machine has been upgraded to a massive **48K RAM** and its still at the amazing **LOW** price of**£399.99** from **SPECTRUM.** It's an ideal Home Micro for graphics, educational and personal finance etc. use it and it will take you from learning up to a small business use. You can add printers, program recorders, disk drives and more, to expand your micro as and when you want, to suit your needs. So if you're looking for a top of the line micro you must see the **ATARI 800** with **48K** at **SPECTRUM - NOW!**



Sensational Price

£299.95 INC. V.A.T.

SPECTRUM FACTS

Maximum user RAM	37,899 Bytes
Text Screen	24 × 40
High Resolution	320 × 192
Cassette Lead	Needs own Recorder

ATARI 400

16K RAM





NOW ONLY

£149.95 INC. VAT

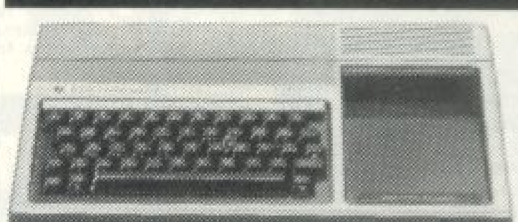
including FREE Programming Kit
BASIC cartridge extra
£39.99 inc. VAT
(£34.77 ex. VAT)

SPECTRUM FACTS

Maximum user RAM	13,323 Bytes
(with basic Cartridge)	
Text Screen	24 × 40
High Resolution	320 × 192
Cassette Lead	Needs own Recorder

ATARI DISK DRIVE
£299.00 INC. VAT

TEXAS TI-99/4A



Yes, now from **SPECTRUM** the **fabulous TEXAS TI 99/4A** Home Micro at a **super NEW LOW PRICE - PLUS!** A SUPER **FREE!** offer too! Worth **£50.85** (which means you're effectively **only paying £99.10** for your **TEXAS TI99/4A** micro). **Hurry!** Offer closes June 30th.

Plus!

FREE!

■ SPEECH SYNTHESISER
or a
■ TI CASSETTE RECORDER
each worth
£49.95

When you buy any 6 Texas Software modules.
Ask your local **SPECTRUM** dealer for details

SENSATIONAL VALUE!

£149.95

including

FREE!

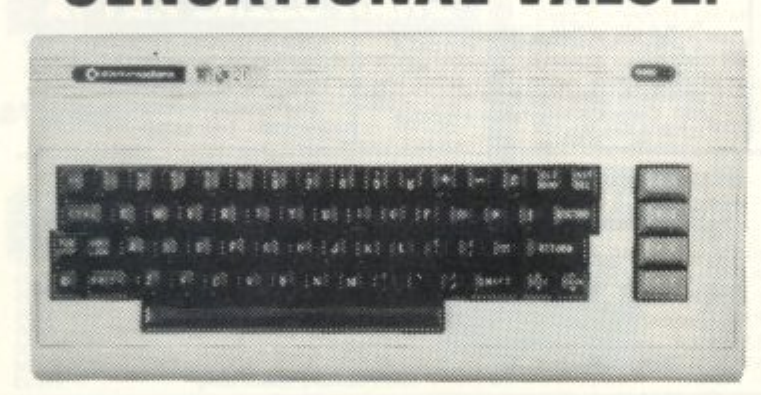
■ Pair of Joysticks ■ Beginners BASIC Tutor program ■ Connect Four program

worth **£50.85**

Ask your local SPECTRUM Dealer for details

Commodore VIC-20 'Package Deal'

SENSATIONAL VALUE!

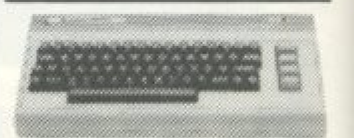


A **complete computer system** including the **VIC-20 Computer,** a **Cassette Unit, Introduction to BASIC part 1** - a simple explanation of computer programming. **A tape of four computer programs - Blitz, Type-A-Tune, Race & Hoppit. A fantastic deal!** and **great value-for-money** - check it out at your local **SPECTRUM** dealer **NOW!! But Hurry!** this is a **limited offer** only **while stocks last!**

SPECTRUM PRICE ONLY

£139.99

COMMODORE 64



Powerful 64K RAM
40-colour displays to monitor TV. High resolution graphics and 3-dimensional effect capability, music synthesiser. Z80 additional processor option.

Spectrum Price
£345.00
INC. VAT

Spectrum Computer Centres have no connection whatsoever with the ZX-Spectrum Computer manufactured by Sinclair Research Ltd.

There's a Spectrum Centre near you . . .

ABERYSTWYTH
AberData at Galloways, 23 Pier St. 0970 615522

ABINGDON
Ivor Fields Computers, 21 Stert St. 0235 21207

ACCRINGTON
PV Computers, 38A Water St. 0254 36521/32611

ALDERSHOT
David Saunders Computer Centre, 51 Station Rd. 0252 20130

ALFRETON
Gordon Harwood, 69/71 High St. 0773 832078

BANBURY
Computer Plus, 2 Church Lane. (0295) 55890

BARROW-IN-FURNESS
Barrow Computer Centre, 96 Church St. 0229 38353

BASILDON
Godfrey's, 28-32 East Walk, Town Centre. 0268 289379

BASINGSTOKE
Fisher's, 2/3 Market Place. 0256 22079

BATH
Software Plus, 12 York St. 0225 61676

BEDFORD
Stanad Ltd., 115 Midland Rd. 0234 49341

BELFAST
Arthur Hobson Ltd., 37 Great Victoria St. 0232 246336

BIRMINGHAM
Sherwoods, Great Western Arcade. 021 236 7211

BOSTON
Fotosound Computers, 19 Dolphin Lane. 0205 64781

BRADFORD
Erricks Foto-Sonic House, Rawson Square 0274 309266

BRIGHTON
Capricorn, 1 Queens Rd. 0273 29634

BRISTOL
Brensal Computers Ltd., 24 Park Row. 0272 294188

BURNLEY
IMO Computer Centre, 39-43 Standish St., BB11 1AP 0282 54299

BURY (Lancs.)
Micro-North, 7 Broad St. Tel. 061-797 5764

BURY ST. EDMUNDS
Bury Computer Centre, Tel. 061-797 9764

CAMBERLEY
Camera Arts (Micro Computer Division), 36 High St. (0276) 65848

CAMBRIDGE
KP Ltd., 12a Kings Parade. 0223 68087

CANTERBURY
Kent Micro Systems, Conquest House, 17 Palace St. 0227 50200

CARDIFF
Randall Cox, 18-22 High St. Arcade. 0222 31960

CHELMSFORD
Maxton Hayman Ltd., 5 Broomfield Rd. (0245) 354595

CHERTSEY
Chertsey Computer Centre, 1, Windsor Street. 09328 64663

CHESHAM
Reed Photography & Computers, 113 High St. 0494 783373

CHESTER
Oakleaf Computers Ltd. 100 Boughton. 0244 310099

COVENTRY
Coventry Micro Centre, 33 Far Gosford St. (0203) 58942

CREWE
Microman, Unit 2, 128 Nantwich Rd. 0270 216014

CROYDON
Cadcom Ltd, 96 Whitgift Centre (Next door to MacDonald's) 01-686 8393

DARLINGTON
McKenna & Brown, 102 Bondgate. (0325) 59744

DERBY
C T Electronics, at Camera Thorpe, The Spot. 0332 360456

DUMFRIES
Vennals, 71 English St. 0387 4547

DUNSTABLE
Dormans, 7-11 Broad Walk. 0582 65515

EDGWARE
Breaker 1-4, 130 High Street. 01-952 7488/8860

EDINBURGH
The Silicon Centre, 6-7 Antigua St. 031 557 4546

EVESHAM
Tecnicare, The Lodge, Brickiln St., 0386 41484

EXMOUTH
Open Channel, 30 The Strand. 03952 4408

GLASGOW
Victor Morris Ltd., 340 Argyle St. 041 221 8958

GLOUCESTER
The Model Shop, 79-81 Northgate St. (0452) 410693

GRANTHAM
Oakleaf Computers Ltd. 121 Dudley Rd. 0476-76994/70281

GRIMSBY
R. C. Johnson Ltd., 22 Friargate, Riverhead Centre. 0472 42031

GUERNSEY
Grut's, 3-5 The Pollet, St Peters Port. 0481 24682

GUILDFORD
The Model Shop, 23 Swan Lane. (00772) 0483 39115

HAMILTON
Tom Dickson Computers, 8-12 Cadzow St. 0698 283193

HARROW
Camera Arts (Micro Computer Division), 24 St. Ann's Rd. 01-427 5469

HATFIELD
Microworld, 2 Crawford Rd. (07072) 64137

HEMEL HEMSTEAD
Faxminster Ltd, Computer & Electrical Discount Centre, 25 Market Square. 0442 55044

HEREFORD
Melgray Hi-Tech Ltd, 49 Broad St. 0432 275737

HESWALL
Thornguard Computer Systems 46 Pensby Rd. 051-342 7516

HITCHIN
Camera Arts (Micro Computer Division), 68A Hermitage Rd. 0462 59285

HULL
The Computer Centre (Humberside) Ltd., 26 Anlaby Road (0482) 26297

ILFORD
Prot Enterprises, 1 Centreway. (next to Sainsburys) High Rd. 01-553 0144

IPSWICH
Brainwave, 24 Crown St. 0473 50965

ISLE OF MAN
T. H. Colebourn Ltd., 57-61 Victoria St., Douglas. 0624 3482 (Just Opening)

JERSEY
Audio & Computer Centre 7 Peter St., St. Helier. 0534 74000

KILMARNOCK
Vennals, 49 Foregate 0563 32175

KIRCALDY
R. Kilpatrick, 254E High St. Tel. T.b.a.

LEAMINGTON SPA
IC Computers, 43 Russell St. 0926 36244 (Opening Soon)

LEEDS
Bass & Bligh, 4 Lower Briggate. 0532 454451

LEICESTER
Youngs, 40-42 Belvoir St. 0533 544774

LEIGHTON BUZZARD
The Computer Centre at Milton Keynes Music, 17 Bridge St. 0525 382504, 376622

LINCOLN
MKD Computers, 24 Newland Street. 0522 25907

LITTLEHAMPTON
Alan Chase Ltd., 39 High St. 09064 5674/4545

LIVERPOOL
Beaver Radio, 20-22 Whitechapple. 051-709 9898

LONDONDERRY
Foyle Computer Systems 3 Bishop St. 0504-68337

LIVERPOOL (Aintree)
Hargreaves, 31/37 Warbreck Moor. 051-525 1782

LONDON E8
McGowans, 244 Graham Rd. Hackney. 01-533 0935

LONDON EC2
Devron Computer Centre, 155 Moorgate. 01-638 3339/1830

LONDON SE1
Vic Odden's, 6 London Bdg. Walk 01-403 1988

LONDON SE9
Square Deal, 375 Footscray Rd., New Eltham. 01-859 1516

LONDON SE15
Castlehurst Ltd., 152 Rye Lane, Peckham. 01-639 2205

LONDON SW6
Chelsea Micros Ltd., 14 Jerden Place. 01-385 8494

LONDON N1
ASP Micro Systems, 185 Upper St., Islington. 01-359 9095

LONDON N14
Youngs Electronic t/a Fieldmaster, 19 The Broadway, The Bourne, Southgate 01-882 5579

LONDON N.20
Castlehurst Ltd., 1291 High Rd. 01-446 2280

LONDON NW9
Moviescope, 459 Kingsbury Rd., London NW9. 01-204 6352

LONDON W1
Devron, 4 Edgware Road. 01-724 2373

LONDON W1
Computers of Wigmore Street, 87 Wigmore St. 01-486 0373

LONDON W1
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GAMES NEWS

SPECTRUM GETS THE BIG VOTE

GENERAL ELECTION

Will she won't she? That's the question being debated over lunch, dinner and tea at Westminster as 635 MPs try to work out when Maggie will call the General Election.

Some say June, some September, and others believe she'll hang on to the New Year.

Whenever she does decide to go to the country one thing is clear. Spectrum owners will be ready for her.

This latest game for the Sinclair machine enables you to experience some of the excitement of the great contest in your own home.

Choose your favourite party — either Labour, Conservative, SDP, or Liberal. Communists, Ecologists, and Official Raving Loonatics need not apply. Once you have picked your party you are ready to play this computerised board game.

As you move around the board you land on squares which represent key constituencies in the provinces. Depending on how you place the important issues in order of priority the seat will be won or lost — with the computer measuring your answers against the correct formula stored in its memory.

To help you plan strategy the computer also has a series of opinion polls and charts which can be called up to show you your standing with the electorate.

General Election runs on the 48K machine and is available from Bug Byte of Liverpool at £6.95.

If taking on the Iron Lady in a tussle at the polls is not enough excitement for you then Bug Byte's other Spectrum release this month will take you to hell and back.

Styx challenges you to get safely across the river of the underworld, rendevous with a mysterious monk, and get back across the river again. As you travel you will have to do battle with monsters of land and sea. The games runs on the 16 or 48K machine and is in the shops now at £5.95.

Also in the Liverpool pipeline is a new game for the Spectrum called Manic Miner, Spectrum Pool, and an original game for the BBC 32K called Sea Lord.



SOME ANIMAL MAGIC FOR THE BEEB

CAROUSEL

Animals are the main characters in Acornsoft's June releases. There are ducks and owls for you to take pot shots at in Carousel — a simulation of the fairground air rifle stall.

Take pot shots at these feathered targets as they bob and weave in front of your gun barrel.

Frogs also jump into the picture in Hopper — a Beeb version of the popular arcade game.

For those of you unfamiliar with the game you have to get your cute little frog safely across a busy road and swirling river. Both games run on the Model B and are in the shops now at £9.95.

A minimum of two games a month have been promised by the premier Cambridge-based games people.

THEIR LIVES IN YOUR HANDS!

RADAR CONTROL

The universal appeal of flight simulation programs has resulted in an increasing number of air traffic control programs being released.

The BBC model B is the latest beneficiary of one of these games from Software For All of London.

The game enables you to try your hand at one of the most high pressured jobs of all — controlling the landings and take-offs at a busy airport.

In Area Radar Controller you are responsible for two landing strips. You must give information to the pilots on altitude, wind speed and other landing conditions.

Any slip-ups will be punished with the sack so you will need all the concentration you can muster if you want to make the grade at this tough job.

The game is available now from the Romford firm at £7.95.

Software For All are also tooling up to write games for the Dragon and have launched their range with an Othello program.

HONEYMOON WITH A MAD WOMAN!

MARTHA'S RETURN

Remember the night poor little hen-pecked Henry flipped and blew the housekeeping on a night of gambling and drinking at one of the local sin bins.

His bossy wife — Mad Martha — didn't like it one bit! Last we heard she was still chasing after him with an axe. But now we know how the domestic story ended. Happily you'll be pleased to know.

After a lengthy session with the marriage guidance councillor both parties agreed to forget their differences and now marital bliss has been restored to their happy home.

For Henry's part he has pledged to spend less time on the golf-course, less money in the bar, and never to darken the doorway again of the Blue Lady Casino.

Martha has also made a promise. To increase Henry's pocket money and to restrict the usage of the family axe to the chopping of fire wood.

To cement the new bond Martha and Henry are off on a second honeymoon to Spain where, according to *C&VG's* Spanish correspondent, Martha has a half-brother called Manuel who is a waiter at the hotel they



Illustrations: Jon Davis

GAMES NEWS

are booked in for the holiday.

But does Martha know about this estranged member of her family? Will Henry be able to stay out of the Spanish gambling dens? And has Martha packed a precautionary axe amongst her stays and corsets?

Will Mad Martha and Henry become the Ken and Deidrie of the computer games world?

All will be revealed in Mikro-Gen's sequel to Mad Martha which is lined up for release in July.

The company are not sure what to call the game and a price has yet to be decided, but it is likely to be around the £6 mark for the 48K Sinclair Spectrum.

REVVING UP FOR THE RALLYCROSS

MOTOR MANIA

Rallycross comes to the screen of your computer in the shape of this driving game for the Commodore 64.

You must drive your car as far as you can along motorway, B-road and dirt track sections, avoiding the various hazards — which include broken glass, potholes, logs, avalanches and other traffic.

A full dashboard display is produced on the screen with speedometer, fuel gauge and mileage.

Motor Mania runs on the Commodore 64 and is available from Audiogenic stockists at £8.95.

Also released this month by Audiogenic for the 64 is Renaissance — a version of Othello and a chess program modestly called Grand Master. Renaissance is available at £8.95 and Grand Master £17.95.

JOIN THE ARCADE JET SET

JET PAC

A team of ex-arcade game designers from Leicestershire have come together to form a brand new computer games software house called Ultimate Play the Game. The company's first offering for the Sinclair Spectrum is a game called Jet Pac.

You have to assemble the three sections of the rocket and then fuel it and blast-off to the next plant.

Jewels and gold are also to be found on the planets and can be picked up to score extra points.

You have a powerful jet pac on your back and can fly all over the screen searching for the various bits of the space ship.

Two ledges, apparently suspended in mid-air, make a good resting place for your little man as he continues his search.

No space game is complete without a nasty tribe of aliens out to get you and Jetpac is no exception to this.

To protect yourself you are armed with a powerful laser gun which can fire left or right.

I played the game using the keyboard but it must be much better and easier to control the action, with a joystick.

The game runs on any Sinclair Spectrum and is available from Ultimate Play the Game of Ashby de la Zouch, Leicestershire, at £5.50.

FRANTIC FUN WITH MONSTERS!

PANIC

Don't Panic! Just keep digging holes for those monsters and watch them tumble into the traps. Then bonk them on the head with your pick axe and you are safe!

Well — not quite safe, as some of these monsters are tougher than others. The easy ones can quite easily be buried by making them fall through one level.

The really tough old boots will just get up and walk away if they only fall through one level and must be made to crash through several.

Sounds familiar? Arcade fans will recognise this game as the early classic coin operated game — Alien Panic.

The game has now been converted for home use by Sinclair Spectrum owners.



Spectrum Panic is the latest game from Hewson Consultants — the authors of Nightflite. It runs on the 16 or 48k machines. and is in the shops now £4.95.

Also new from Hewson for confirmed computer pilots is an air traffic control simulation which enables you to try your hand at the nail biting job of controlling the comings and goings at a busy airport.

Adventure enthusiasts have also been included in the latest batch from Hewson in the shape of a 48k graphic adventure called the Quest. The program is available now at £7.95.

ORIC AT A LOSS FOR SOFTWARE

AWARI

Alas poor Oric — your software is thin on the ground. Not much to choose from yet on the space invading, ghost gobbling adventure seeking, alien blasting front yet for this new computer.

Despite the shortage two games have arrived on the Games News desk for this machine. And although they don't involve blasting aliens the games will make you think!

Awari is a computerised version of the ancient African pebble game. Several levels of play enable you to play against a friend or, if you're feeling confident, you can take on the computer at Witch Doctor level.

For those unfamiliar with Awari, it is based on a tribal strategy game of moving pebbles around a series of bowls.

Another strategy game makes up the second Kenema offering. Othello, dealt with in our columns as Reversi, the counter capturing game of skill, which computers are particularly good at.

The games are available from Kenema Associates Ltd, Worle, Avon, at £6.50 for Othello and £5.50 for Awari.

GAMES NEWS

ON THE RACE TRACK IN THE DARK!

OVERDRIVE?

Switch into overdrive with this racing simulation for the Sinclair Spectrum.

The game is still on the drawing board but we can reveal that you race a car through the night. Red cats-eyes mark the borders of the road. You control the car using the keyboard, and face the challenges of the race track.

The game is available from Abbex Systems of London at £5.95 although a final decision on the game's title is yet to be made.

Also new from Abbex this month is a deluxe version of Galaxians for the 48K machine and a 16/48K version of the popular arcade game — Scramble.

Abbex have also branched out onto other computers with their first game for the Commodore 64 — a flight simulator at £7.95.

DON'T STICK YOUR HEAD IN THE SAND

JOUST

In days of old when knights were bold they rode around on ostriches. Yes, ostriches. What's that? You've never seen a knight riding one of these bad-tempered birds.

Well, just look out for this latest conversion of hit arcade game — Joust.

You play the part of the good knight on his trusty ostrich armed with a lance and doing battle with the dark lords on their buzzards.

The Dark Lords are no easy opponents as they have been programmed to predict your next move and lay traps to ensnare you.

Softek have also looked to the arcades for the idea behind their second new game this month.

Called Firebirds — it is a shoot 'em up hybrid of arcade favourites — Phoenix and Firebirds.



Illustrations: Jon Davis

An assortment of aliens have to be wiped out before you get to their home base.

Joust and Firebirds run on the Sinclair Spectrum in 16 or 48k and are available from London-based Softek at £5.95 each.

Dragons meet Monsters in Softeks first release for the fire-spitting micro. The idea of the game is to get your little man safely through several levels to the bottom of the screen and pick up a power pill. Take this safely back to your craft before your oxygen runs out or you get nabbed by one of the monsters.

Monsters is based on the arcade game Panic, where you have to dig holes for the monsters with an ice axe. In this Dragon conversion the pick axe is replaced with a laser gun.

The game runs on the Dragon 32 and is available now from Softek at £7.99.

KNOCK SPOTS OFF YOUR SPECTRUM!

DOMINOES

Put on your cloth cap, clogs and moleskin trousers and toddle off to the Dog and Ferret for a game of Dominoes.

Or, if its raining, stay at home and take on your Spectrum with this latest game from brand new software house — Micromega.

The computer deals the dominoes and plays the double-six to start the game.

Normal rules apply and you'd better not cheat as the computer has been programmed to spot any dubious moves.

There is a strong flavour of the casino in Micromega's other releases, including a Roulette cassette and game called Monte Carlo which features pontoon and a version of the American gangsters dice-rolling game — Crap.

The games run on the Sinclair Spectrum in 16 or 48K and are available from the London-based firm at £5.00.

MARIO MEETS THE MAD APE — AGAIN!

DONKEY KONG

Mario and the ape are at it again. Fighting for the hand of a blonde starlet.

If you've read Games News before, you should know the story-line backwards by now — ape kidnaps girl, takes her to top of steel fortress, gallant Italian carpenter comes to rescue armed with mallet.

So what's new? A version of the game for the BBC model B that's what.

This version of Donkey Kong from Micro Power of Leeds has four screens and many of the features of the arcade original including barrels, fireballs, custard pies and moving elevators.

Other arcade game conversions for the Beeb include a game called Painter which is a version of the loony Amidar — with pigs, painrollers, and fierce tribesmen.

Scramble fans are also catered for in the shape of Moon Raiders. This scrolling shoot 'em up has six sectors which must be flown through, complete with various obstacles — bomb and fire and keep an eye on your fuel gauge.

The games are available now from Leeds-based Micro Power at £6.95 plus VAT running on the BBC model B.

JOIN TRON INSIDE THE MICRO

ESCAPE MCP

Tron is back inside the computer — but this time it's not a fictional machine but none other than your Vic-20

Escape MCP is based on the Walt Disney feature film and challenges you to find your way to the Master Control Program.

To stop you doing this the MCP is patrolled by robots who do not need to follow the maze-like route of the silicon chip that you have to follow — but can zoom straight towards you.

If battling it out with the computerised baddies of the 21st century is not enough excitement for you and your Vic why not join the Paratroopers.

In this game you have to stop a commando style raid by the enemy who are dropping their crack regiment into your territory from helicopters.

A batch of new games are being released this month by Rabbit including a Pacman-type game called Pakacuda, Matter Splatter — an original arcade style game which challenges you to shoot barrels falling out of holes in a wall, and a driving game entitled Race Fun.

The games are available now from your local Rabbit stockist at £5.95 for the unexpanded Vic.

Escape MCP, and Pakacuda are also available for the Commodore 64.

ATARI VCS OWNERS

INCREASE THE PLAYING POWER OF YOUR ATARI 2600 VCS BY UP TO 50 TIMES



THE NEXT DIMENSION IN VIDEO GAMES©

WHAT IS THE SUPERCHARGER?

The Supercharger plugs directly into the cartridge slot of your Atari VCS to increase its game playing power. With special digital electronics, it multiplies the VCS RAM memory by 49 times, from 128 to 6272 bytes. The Supercharger is unique, in that it can accept programs that have been recorded on standard audio cassette tapes. These are easier and less expensive to develop and market than plug-in cartridges and cost considerably less! The Supercharger is supplied with a standard cable and jack plug which will plug into the earphone socket of any domestic cassette tape recorder. Supercharger lets you play games with high resolution graphics, faster action, and far more complexity. With the extra memory provided by the Supercharger you will now be able to play superior games which could not normally run on an unadapted Atari VCS because of its memory limitations.

MULTI LOAD GAMES - For added complexity and depth

Cassette tape allows Starpath to offer unique Multi Load games. Games like Dragonstomper and Escape from the Mindmaster include several 'loads' on one cassette. When you have finished the first part of a game, you can then load another program giving a different screen or type of game play, thus continuing the game in several distinct parts. This feature is particularly useful in adventure type games. Multi Load games offer complexity and depth that no conventional ROM cartridge game can currently compete with.

FREE CASSETTE - Phaser Patrol (Two screen game)

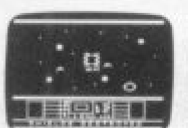
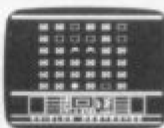
The Supercharger comes with a highly acclaimed and award winning Phaser Patrol game, and costs only £39.00 including VAT. Details of all the games are given below. For further details, complete and return the coupon below.

£39



PHASER PATROL (FREE!)

Phaser Patrol is a single load game which is FREE with the Supercharger unit. A space game, it has two screens, one featuring the intergalactic battlefield, (below left), and the other showing a Sector Map (below right). The game begins when the devious 'Dracons' launch a surprise attack and you belong to the force which must prevent them from reaching earth. The sector map enables you to warp-hop from one sector to another and it also tells you in what areas the Dracon ships are, so you will need to refer to it before you go into battle. As well as telling you the location of the Dracons, the map shows you where your starbases are, these can bail you out if you get into any trouble. When you have decided on the sector of Dracons to attack, you can go on to the second screen, the battlefield. On this screen you have a view of the vast galaxy ahead and a control panel to keep you informed of your position. A one player game, Phaser Patrol is a highly detailed action packed cassette.


MUTANTS FROM SPACE



Single Load action from Starpath, just as soon as you begin this game you will be under attack. Your task is to vapourize the mutant warriors before they overrun your home planet. Up to four can play and the screen keeps track of the highest score. As well as having nine difficulty levels and two speeds, Communist Mutants from Space (it's full title), has got several features which make it an exciting game cassette providing a variety of options. The real skill in this game however, is winning without using the special features that it offers you!

Price: £14.30+VAT=**£16.45**

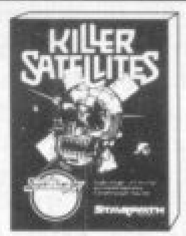
FIREBALL



You are a juggler, and able to juggle anything from china plates to daggers! Your task in this Single Load game is to smash wall after wall of blocks as you juggle with red hot FIREBALLS! When the ball comes down from the top of your screen, catch it, and then release it back at the wall of blocks. You can score up to a million points! And, if you get to proficient at one pattern of blocks, there are another four to choose from! Up to 4 players can take part in this game and up to 6 fireballs can appear on the screen at once. Be sure you don't get burned!

Price: £14.30+VAT=**£16.45**

KILLER SATELLITES



You are the only test pilot of the one rocket ship that can protect the earth from an alien attack of molten metal. The invasion has started, have you the courage and skill to save mankind? A Single Load game, Killer Satellites is for 1 player featuring 2 difficulty settings as well as a 'rapid fire' mode. Other features include: a fuel level indicator; a laser overheat monitor which indicates the temperature of your gun; a global radar scanner and an energy barrier, which can be used to protect you from some of the alien projectiles . . . . but not all of them!

Price: £14.30+VAT=**£16.45**

SUICIDE MISSION



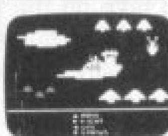


Your mission in this game is to shrink down, smaller than a speck of dust, to do battle with a deadly killer virus deep within a human body. Equipped with a microscopic submarine, head for an infection, perilously close to the heart, and towards a fight where you are heavily outnumbered. This is arterial warfare at it's finest. Fire at one of the many germs, and it divides into two. Fire again and the numbers increase once more. A 1 or 2 player game featuring protective shields and two different shooting styles, Suicide Mission has three difficulty options.

Price: £14.30+VAT=**£16.45**

DRAGONSTOMPER





Dragonstomper is one of Starpath's Multi-Load cassettes. An adventure game, you've been swept through a time tunnel, right back to the age of warlocks and wizardry. Your mission is to find the Amulet of the Druids. There are clues, but not all easy ones. There are peaceful lakes and forests as well as deadly perils and lurking somewhere is a very vengeful dragon. There are many rewards along the way, but few will reach the final goal. The MULTI LOAD feature gives you THREE seperate game segments, for longer, more challenging game play.

Price: £16.91+VAT=**£19.45**

ESCAPE/MINDMASTER



A Multi-Load cassette, your task in this game is to escape from the alien Mindmaster's laboratory, where he has held you as a specimen for study. To win your freedom, you must pass through six 3-D mazes, with each of them being more complex than the last. The first 5 mazes have problems to solve and some surprise intelligence tests. The sixth maze is something special! As this game is too complex to load into your Atari at one time, it loads in FOUR different sections, a feature of the extra play power of the Starpath MULTI LOAD cassettes.

Price: £16.91+VAT=**£19.45**

VIDEO GAME CLUB

In a fast moving market like video games, it is difficult to keep up to date with all the developments that take place. With new programmes and accessories being introduced at a fast rate by several different manufacturers, it is impossible to get all the information you require from one manufacturer alone. It is for this reason, that we have set up owners clubs for the more popular video games and home computers, to keep you fully up to date with what is going on with your particular machine. As far as we know, Silica Shop are the only company to offer such clubs, but that is not surprising since we are the specialists. We currently have **FREE** clubs for the **Atari VCS, Atari 400/800** home computers, and **Mattel Intellivision.** Soon we will have clubs for **Colecovision, Aquarius** and **Vectrex.** So if you own one of these machines, fill in the coupon opposite, and we will enrol you **FREE OF CHARGE** in the club relevant to your computer or video game.

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FREE LITERATURE

SUPERCHARGE A VCS AND LOAD UP GAMES FROM CASSETTE TAPES

The Starpath Supercharger is an expansion card for the Atari VCS.

It does more than the standard home computer Ram-pack as it also enhances the graphics and colour quality of the 2600.

The expander plugs into the games port on the VCS. A lead connects the supercharger to a cassette recorder and the games are loaded from tape.

Only tape-based games can be loaded via the supercharger and the expander does not add anything to existing cartridge games.

The really exciting possibility opened up by the Supercharger is the prospect of a new range of cheaper cassette-based games.

The Supercharger itself comes with a free game — Phaser Patrol, which features impressive Star Raiders type action.

Six games are so far offered in the Starpath range: Phaser Patrol, Dragonstomper, Killer Satellites, Communist Mutants From Space, Fireball, Suicide Mission and Escape From the Mindmaster.

More games are in the pipeline from Starpath and the company are busy drumming up interest in the Supercharger on the part of some leading American games firms.

Don't expect miracles from the Supercharger. Graphics and colour are undoubtedly better than on some of the earlier VCS titles — currently being sold off for as little as £10 — but some of the excellent colourful new games currently being released — (Pitfall, Vanguard and Ms Pacman) compare favourably with it.

The Supercharger also enables more moving characters on the screen than were previously possible on the 2600 though you would have to look long and hard to notice this extra capacity during game — play.

The most impressive feature of the Supercharger is the multi-load facility. This enables several games to be stored on one cassette. They can be played separately as one-offs or, can be played in sequence, as part of one larger game.

Again in the Supercharger's favour it uses a quick automatic load system. Each of the games I tested, loaded in seconds first time. None of the hit-or-miss problems of loading cassette games into some home computers.

The best example of the multi-load facility is to be found on Dragonstomper — an adventure trilogy.

The first part of the game is called, The Enchanted Countryside. You are a traveller in this land. Your objective is to build up sufficient power and magic to get into The Oppressed Village. In order to do this you will need to vanquish the ghouls, spiders, warriors, snakes and serpents in the employ of the evil Dragon.

Gold is awarded for each successful encounter with one of your adversaries. When you have built up all your resources you can attempt to get over the bridge into the Oppressed Village.

If you are successful, the second part of Dragonstomper is then loaded and you find yourself in the Oppressed Village.

Dragonstomper is the best game in the current Supercharger range and looks like becoming a good seller as the penchant for adventure games gains momentum.

The main drawback with sinking your cash into adventure games is that once you've solved

STAR WARS SWORD MASTER

May the force be with you! You'll need it when you enter the Jedi Arena.

This latest release from Parker Video Games for the Atari VCS is based on the forthcoming addition to the Star Wars saga called Revenge of the Jedi.

You take the part of a Jedi knight battling the deadly Seeker and an opponent of the Jedi Arena. The Seeker is a remote controlled ball-of-tricks which sends out beams of laser fire.

Usually this laser fire is controlled by the participants in this fight to the finish — the two Jedi knights, face to face across the arena, blasting away at each other in a bid to break down their opponents force-field defence.

The knights guide the laser blasts from the Seeker using their Lightsabres — the Seeker's blasts go in the direction the sabre is pointing.

But the Seeker tends to go "wild" occasionally — zipping around the arena sending out lethal beams of energy that neither of the knights can control! Then it's every man for himself.

You can either take on a computer controlled enemy, or fight it out with a friend using the Atari's paddle-controllers.

Jedi Arena — the latest in Parker's cartridges based on the Star War movies — will be available from March and will sell at around £29.95.

BACK FROM THE DEAD!

Dracula is alive and well and living in the Intellivision Video Games Console.

The long fanged phantom from Transylvannia has been haunting the programming department of Imagic Games — and now he has bewitched them into preserving his grizzly memory for ever in silicone.

You can bring him to life by plugging in this latest cartridge for the Mattel Intellivision video games centre.

The idea of the game is to sink your fangs into as many helpless victims as possible. Points are awarded according to the number of pints of blood you can consume.

Just as in the old films, Dracula can take on the form of a bat as well as a human. This is a useful facility in this game as it enables you to move faster than your victims.

It is not all in Dracula's favour though, as there are still some good characters left in this godforsaken city. The constable armed with a wooden stake, the white wolf, and the vulture that can successfully attack Dracula when he appears as a bat.

Ice Trek challenges you to dodge a stampeding herd of caribou, cross an ice-filled river, and finally to melt the ice palace and set free the Aurora Borealis to light up the sky.

You play the part of Vali the Avenger and your arch enemy in Ice Trek is Kaltron the Terrible. You will also meet in the course of your adventure the Wildlife Queen who fires her arrows at Vali if he is forced to kill a caribou.

The third game in this trio of new releases from Imagic for the Mattel Intellivision games centre is Tropical Trouble — a jungle adventure.

The idyllic holiday island turns into a tropical nightmare when your darling Doris is kidnapped by the Beach Bruiser.

In order to get her back — and prove to her that you're not the clumsy Clarence her mother always said you were — run through the jungle to find her. Dodge the boulders, coconuts, falling lava, and hurled rocks as you go.

Dracula, Ice Trek, and Tropical Trouble are in the shops now at around the £25 mark.

LAUNCH DATES PUT BACK

Atari's new super-system, the 5200, has had its launch date put back due to Atari setting up a new production plant in Ireland.

The bad news for would-be purchasers is that it is now un-



GAMING

them, there's not much incentive to play them again.

Dragonstomper's three games in one should be enough to keep even the most skilled adventurer occupied for a very long time.

The multi-load facility is incorporated in another of the highlights from the Supercharger range — Escape From the Mindmaster. Its rare to see anything new these days among the plethora of new video games hitting the shops. Mindmaster provides the best evidence that the designers' ideas haven't dried up.

The idea of the game is to outwit the mindmaster who has trapped you in a maze. A number of intelligence tests — such as fitting shapes into their right holes will be presented and you must get them right to proceed.

The maze itself is very impressive — drawn in 3D with a convincing simulation of depth as you penetrate its corridors.

If you master the first maze the multi-load device will then load your second tougher test. There are four mazes altogether on the tape.

Two other reasonably good games are Killer Satellites — a scrolling shoot 'em up where you have to protect a city being bombarded by an assortment of alien bombs, ships and satellites.

The second game in the reasonable category is Fireball — a break out type game with five versions to choose from. A nice development of the basic idea is the replacement of a bat with a little character at the bottom of the screen who must first catch the ball and then throw it back at the wall, aiming at the brick he wishes to dislodge. If you fail to catch the ball a large hook on an elongated arm comes out from the left hand side of the screen and pulls your hand off.

In the not-so-hot category are Suicide Mission and the ridiculous Communist Mutants From Space.

Suicide Mission is a version of



Asteroids — and a none too impressive one at that. The colours were watery and the screen flickered constantly. The saucers moved far too slowly and there was no hyperspace button.

The scene-setting blurb for this game tries to align the plot to the film *Fantastic Voyage* — pretty silly as anyone who plays the game will know its supposed to be Asteroids.

Communist Mutants From Space is a dull shoot 'em up. I cleared screen after screen on my first go.

C&VG verdict on the Supercharger — at £39.95 for the expander plus Phaser Patrol a definite yes. Once you've got the thing itself Dragonstomper and Mindmaster will also look like very attractive buys at £19.95 each. Fuller reviews will be included in the Joystick Jury columns, at a later date.

likely to be in the shops until the winter.

Another delay is anticipated in the VCS keyboard add-on which turns your VCS into a home computer. Andrew Swanston — Atari's marketing and sales director, told *C&VG* that the firm would not be launching the keyboard until there was a good range of software available for it.

COSMIC CREEPS

Jawbreaker sounds a far too apt name for a Tigervision cartridge but you shouldn't conjure up pictures of creatures with mammoth fangs.

The jaws in question belong to you.

Tigervision is an established name in video games in America where they have launched several titles — the best known of which is the climbing game Miner 2049'er.

The first cartridges compatible with the British PAL electrical frequency are King Kong and Jawbreaker. No prizes for guessing what King Kong is — but for newcomers to video games the main characters are an ape, a girl and a gallant little chap who tries to scale the skyscraper to rescue her.

Jawbreaker brings back the subject of food to the screen of your television with a notion which should appeal to every youngster.

This is your chance to run riot in a sweet factory eating away to your heart's and belly's desire.

You control a pair of chomping teeth on a mission to clear the screen of sweets. A quick brush of the old fangs and your ready to tuck into another screen full.

Yet more video game nosh to be found in Fast Food but this time for the savoury rather than the sweet-toothed. There are burgers, hot dogs, and French fries just waiting to be chomped in this brand new Telesys game.

Telesys second new game has the wonderfully idiotic title — Cosmic Creeps.

The idea of the game is to rescue the Cosmic Kids from the doomed planet before the Cosmic Creeps can get their nasty little alien paws on them.

The games are available in compatible PAL format from Electronic Leisure Products of Limerick, Ireland. They cost £22.00 plus VAT.

SEGA RANGE FOR ATARI

Leading Japanese arcade game designers Sega are launching a range of games for the Atari VCS.

Sega are best known to videogamers for the hit arcade games Zaxxon and Frogger.

Their first offerings for the VCS, which have been launched in the States, are Tac-Scan and Sub-Scan.

Tac-Scan may have been spotted by some of you in your local arcades but for the uninitiated it is an extremely tough 3D shoot 'em up.

The three dimensional effect is created by a never ending series of concentric hexagons. You control three Tac-Scan craft flying through space which are set upon by a deadly superfleet from Ahm.

Also on the way from Sega is Sub-Scan which is described as a battle of wits on the high seas.

No date has yet been set for a UK launch for the home video games though they are bound to come into the country sooner or later as Sega already have a very strong foothold in the country's arcades.

Sega are likely to provide hot competition for the leading video games manufacturers as the Sega designers have a reputation for producing hit games which is the envy of the industry. So arcade titles which are likely to make winning conversions to home systems may not be up for grabs by the large firm's licence hunters.

● The copyright case Atari had pending on Imagic's Demon Attack cartridge (see the April issue of *C&VG)* has been settled out of court. The result a stalemate.

And the court battle over the Colecovision VCS conversion module is settled too. With Coleco paying Atari royalties. It should be in the UK by September.



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VIDEO



JOYSTICK JURY

DRATS DRIVE YOU CRAZY!

Crazy Chase must have got its name because it drove Phillips Videopac testers crazy.

You control a little blue disc called the Munchkin which you steer around a maze attempting to eat segments from a snake's tail.

You are pursued by a couple of Drats who can cause the Munchkin to shrink away to nothing if they catch it.

Points are awarded for each segment consumed but if you want to score really highly you will also have to eat the Drats. In order to do this you have to catch them during the brief few seconds they have changed colour after you have eaten a segment from the tail.

If that sounds easy then just you give it a try. As you play, the snake — or Dratapillar to use the correct zoological term, gets faster and faster. The effect of this is that you lose your speed advantage and have to rely on sharp cornering and planning to catch the odd segment.

There are four Pac-Man style escape tunnels which you can run through to get to the other side of the screen. But be careful as the Drats can follow too.

This game is so tough that high scores deserve a reward. So if you've scored over 500 on Crazy Chase send us a photo of the screen with the score and our friends at Phillips will send you one Videopac of your choice from the current range.

Only the first five entries to reach the *Computer and Video Games* office will win prizes.

Send your high score photos to our Herbal Hill address which you will find on page three of the magazine. Please mark your envelope Crazy Chase Competition and state the game you would like to receive should you be a winner.



THE VERDICT

A tough, addictive game and definitely on the 'must get' list for G7000 owners. Proof that Phillips can make 'em just as good as anyone else.

Action: ⊥⊥⊥⊥
Graphics: ⊥⊥⊥
Addiction: ⊥⊥⊥⊥
Theme: ⊥⊥⊥

COOKING UP A NIGHTMARE

The chef's nightmare comes true in Burger Time as his ingredients grow to life size and set off to eat him.

The Intellivision action takes place in a series of seven mazey kitchen designs that will never find their way into the Ideal Home Exhibition.

As a fried egg, several tomatoes and — later on — a pickle, leap out of the frying pan and start looking hungry, you have to guide the chef around a maze of platforms and ladders trying to make burgers. The ingredients react to your every move occasionally despatching one of their number to head you off but usually following close on your heels.

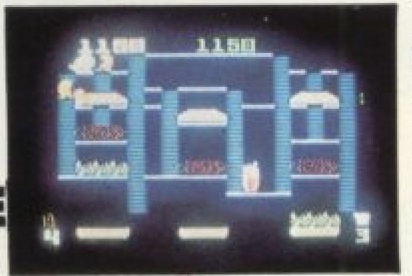
More docile ingredients, like burgers, buns, lettuce and tomato slices lie ready for cooking on platforms. As you run over them they drop down a level, pushing the next ingredient down below them and gradually settling to form a completed burger at the bottom of the screen. Complete all your burgers and you're onto the next screen.

If the more active ingredients get too close you can turn and "pepper" them with a shake from your pepper jar, putting them out of the action for a while. You can also squash them under dropped buns for 100 points each or, for even more points, tempt them onto a bun behind you and then drop it by stepping off. An additional bonus is that the bun will then drop two levels.

French fries, coffee, ketchup and ice cream appear on the screen occasionally and can be gobbled for points and extra pinches of valuable pepper.

Burger Time is still a popular arcade game and this Mattel cartridge captures much of the flavour of the original. It's harder than it looks.

The key to good arcade games is that while beginners can survive long enough to learn the game, experts have early opportunities to show their paces and boost their score: Burger Time is a marvellous example.



THE VERDICT

The balance is just right and the theme makes it a real winner. A challenge from the word go.

Action: ⊥⊥⊥⊥
Graphics: ⊥⊥⊥⊥
Addiction: ⊥⊥⊥⊥⊥
Theme: ⊥⊥⊥⊥⊥

GREAT BALLS OF FIRE!

Things are hotting up on the games front with a fire breathing dragon to contend with in Imagic's latest release.

You play the part of the brave prince who is attempting to get into his father's castle to rid it of the evil dragons.

In order to get into the castle you must first dash across the bridge and into the treasure room.

The prince can be made to crouch by pulling back on the joystick. Depressing the fire button makes him jump. For best results run into the jump with precise timing to clear the fireballs and gain extra ground. Once safely into the treasure room, you have to clear the screen of diamonds, crowns, goblets, jugs, harps, helmets, lamps, and candelabra to score points.

When you have collected all the treasure you can make for the escape exit at the top left-hand corner of the screen.

But don't expect to take a leisurely stroll around the treasure room. There's a fire breathing dragon in there as well, who is programmed to track you and fry you with fireballs.

There are seven dragons to get past in order to master this game and every time you clear one treasure room you come up against a tougher quicker dragon in the next.

Dragonfire scores highest on graphics. Those dragons look pretty mean and their fire breathing movement is impressive.

We tested the game on the Atari VCS but the game is also available in Mattell Intellivision format.

The game is in the shops now at £24.30 plus VAT for the Atari version and £27.34 plus VAT for the Mattel.



THE VERDICT

A tough, addictive game at the first sitting. A slight question mark over the game's lasting appeal. Once you've beaten that seventh dragon what then?

Action: ⊥⊥⊥
Graphics: ⊥⊥⊥⊥
Addiction: ⊥⊥⊥
Theme: ⊥⊥⊥

TOP

MACHINE	MANUFACTURER
1 Phoenix	Atari
2 PacMan	Atari
3 Frogger	Parker Brothers
4 Invaders	Atari
5 Pitfall	Activision

All the above cartridges are pro[...] games centre.

	MACHINE	MANUFACTURER
6	Donkey Kong	Coleco
7	Defender	Atari
8	River Raid	Activision
9	Demon Attack	Imagic
10	Berzerk	Atari

produced for the Atari VCS home video

GAMING

BIGGER BURGER PRIZE!

There are five Burgertime cartridges awaiting the most imaginative Intellivision owners out there.

Burgertime brings a whole new meaning to the term "fast food".

Artist Phil Littler has come up with his interpretation of a super burger which would dwarf any of the varieties to be found in high street outlets.

We want you to come up with a name for this beefiest and brightest of burgers and write in to tell us what it should be called.

Please send your best suggestion into the Biggest Burger Competition, *Computer & Video Games,* Durrant House, Herbal Hill, London, EC1R.

The entry must be with us by July 16th and the five Burgertime cartridges go to the five names which best describe this mighty burger. Computer terms may or may not influence the judges' decision — but it's final anyway.



LOOK MUM, NO WIRES!

The trouble with playing video games on the conventional family TV set is that the console has to sit on the floor beneath the set in the corner of the room.

To play you either have to sit on the floor in front of the screen, pull your chair up in front of it, or make the wires stretch right across the room to the sofa.

One attempt to get around this problem is Wico's extension cable which simply adds length to your joystick wire. Although this enables armchair play, it increases the Spaghetti Junction of wires.

Now there is a real solution to the problem in the shape of the world's first remote control joystick.

The Cynex is the brainchild of Sandy Goldnar who is also president of the American-based firm.

The heart of the new joystick is the world's first radio chip which enables objects to be moved on screen at up to several yards distance.

The stick has been on sale in the US for several months now.

The large video games manufacturers have also been quick to spot the potential of the remote control stick and Atari have now signed a deal to get first buying option on any of Cynex's new products.

Now that the radio chip has been developed it will be a relatively short step to include the controls inside the games system itself and this is now the key project for Cynex.

The remote control joystick is imported into the UK by Dynavest of London and will be in the shops in June at around the £50 mark. For this you get two remote control joysticks plus the control box which connects to the Atari VCS. The system is also compatible with the Vic 20.

Don't miss next month's *C&VG* for your chance to win a Cynex.

WHERE NO GAMESTER HAS GONE BEFORE

You can enjoy travelling the space sectors of Phaser Patrol for yourself and start up your own Supercharger collection by entering our Atari quiz below.

The UK importers of the Supercharger, Electronic Leisure Products of Limerick, Ireland have put up three Superchargers with Phaser Patrol and two other cassettes of your own choice to be won in our competition.

All you have to do is tick the correct answers to the following questions about the Atari VCS and some of its games.

Send your answers to Supercharger Competition, 6 Meadowvale Close, Raneen, Limerick, Ireland. Please be sure and include your name and address and a telephone number so we can let you know if you've won.

Also state the name of the two other Supercharger cassettes you would like to receive.

No employees of EMAP or Electronics Leisure Products or their relatives is permitted to enter the competition. And the usual Computer & Video Games competition rules apply.

The entries must be in by July 12th.

Simply fill in the coupon below, cut it out and send it off to the address above. Best of luck and if more than three of you answer all the questions correctly your ideas on the Supercharger games question will decide the prize-winners.

SUPERCHARGED QUESTIONS

1) Pacman takes its name from:
- a) A famous 19th Century ghost story ☐
- b) The Japanese word Paku meaning: to eat ☐
- c) The Japanese ball bearing game Pachinko ☐

2) Demon Attack has the following number of attack waves featuring different aliens:
- a) 26 ☐
- b) 84 ☐
- c) 230 ☐

3) Pitfall was designed by:
- a) David Crane ☐
- b) Ernest Greystokes ☐
- c) Henry Stanley ☐

4) What stalks the riverbank in Frogger:
- a) A snake ☐
- b) A lady frog ☐
- c) An otter ☐

5) Atari's world HQ is based in:
- a) Slough ☐
- b) California ☐
- c) Tokyo ☐

What sort of game would you like to see on the VCS in cassette form (not more than 24 words please): ....

....

My name is: ....

Address: ....

....

.... **Tel:** ....

If I win the two other cassettes I would like to own are:
Dragon Stomper ☐ Fireball ☐ Escape from the Mind Master ☐ Communist Mutants from Space ☐ Killer Satellites ☐ Suicide Mission ☐

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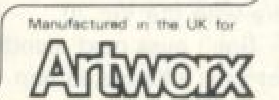
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CHESS

THE RUSSIAN GRANDMASTER

The most celebrated participant in the computer chess field is undoubtedly the Russian grandmaster Mikhail Botvinnik.

Botvinnik was world champion from 1948 to 1963 with two one-year breaks, when he lost the championship first to Smyslov and then to Tal, only to win back the title in a return match a year later each time.

Botvinnik was born in 1911 in the Ukraine and until his retirement a few years ago was a noted electrical engineer as well as a chess grandmaster. He attained the status of Soviet master as long ago as 1927 and first won the championship of the Soviet Union in 1931. He became well-known in the West with his joint first place at the Nottingham tournament in 1936.

Botvinnik's career provides a bridge between the almost mythical days of Capablanca and Alekhine, 50 years ago and the computerised chess of today.

THE PIONEER

Since his retirement from active play 10 years ago, Botvinnik has concentrated increasingly on the latter, preparing his program which is known as Pioneer. However, his interest goes back much further to a time when he was still a leading active player. As far back as 1968, Botvinnik gave a lecture in the Russian town of Vladimir in which he described a chess master in terms which have a strong computing flavour. "A master in his play has two functions. First of all he functions as a calculating and solving mechanism because he has to consider the possible moves and analyse variations . . . A second function is also very important — one's ability to program oneself, to perfect one's individual program . . . to modify it in a constant research for improvement and perfection. One can consider a player who gives due attention to this aspect as guiding himself by a definite program or algorithm."

Botvinnik saw the development of an "artificial intellect" — an electronic machine capable of playing chess — as a major problem. If it could be achieved, he said: "I foresee an unprecedented period of popularity for the game. When an electronic machine has started playing chess and played it successfully this will be such a momentous event that every schoolboy will want to know about it. In world history, it will perhaps fall not far short in importance of the discovery of fire."

Botvinnik's book, *Computers, Chess and Long-range Planning,* also appeared in 1968. It is a very complex mathematical representation of chess introducing a number of ideas such as a "generalised exchange" between different kinds of advantage (such as material and space), the attacking path of a piece, the intangible value of an attack, and the position estimate of a chess position (which indicates when a positional sacrifice may be advantageous).

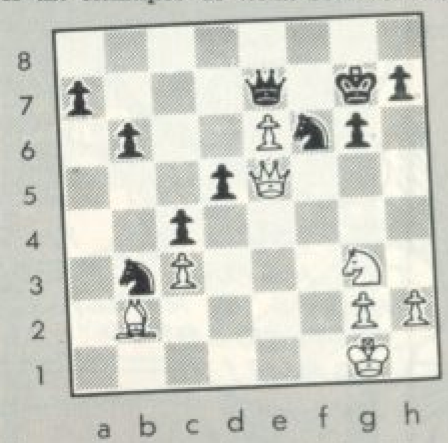
Although the original Russian title of this work meant literally "An Algorithm for Chess", the text is far more of a blueprint for a lifetime's study than an algorithm.

CAPTURED SKILL

In April two years ago Botvinnik came to London to speak at the Advances in Computer Chess conference at Imperial College. (The next conference is scheduled for April 1984). In his lecture, Botvinnik stressed the need for a program to examine only a small number of positions at each turn (preferably only one) and to restrict the analysis for each move to approximately 50-60 well chosen positions in all, if master play were ever to be achieved. Thus the emphasis should be on selecting the positions to examine and evaluating them properly — exactly the opposite approach to BELLE. Many experts believe that if Botvinnik's method of representing the master's positional and evaluative skill could be captured in a program, this would be a major step forward for computer chess.

Sadly, after many years of development, Botvinnik's Pioneer has still not appeared except in experimental form, and it must be doubtful now that it ever will. Perhaps grandmaster chess is too complex a problem for the current state of the chess programmers' art — certainly much more tangible success has been achieved by programs like BELLE which search huge trees of variations but understand almost nothing about them.

As an example of what Pioneer can achieve with a complex position, Figure 1 shows a famous position which Botvinnik (white) reached against Capablanca at the Rotterdam tournament of 1938.

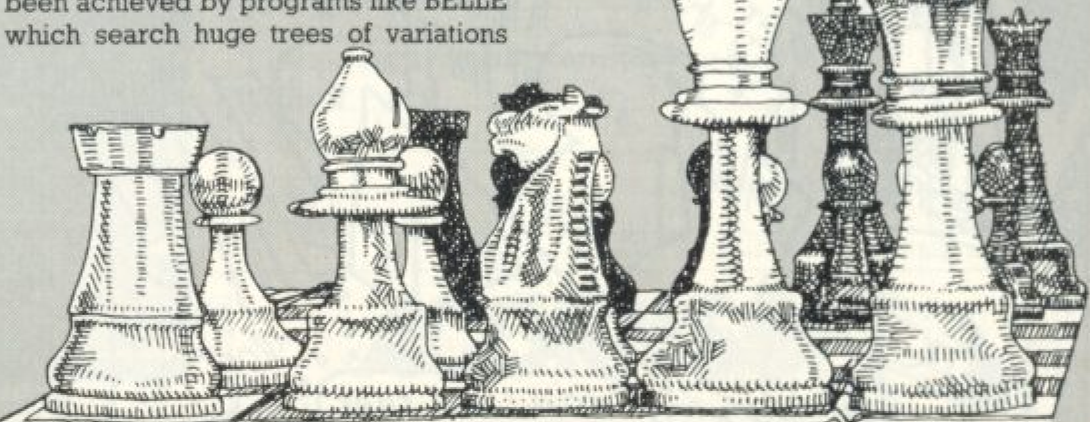


White to move can now choose between two strong-looking options 1.N-R5ch and 1.B-R3. Botvinnik's analysis at the time looked at 28 positions in total, with an average branching factor (number of moves considered in each position) of 1.13. Pioneer's analysis of the position looks at 40 positions with a branching factor of 1.05 and find the variation:

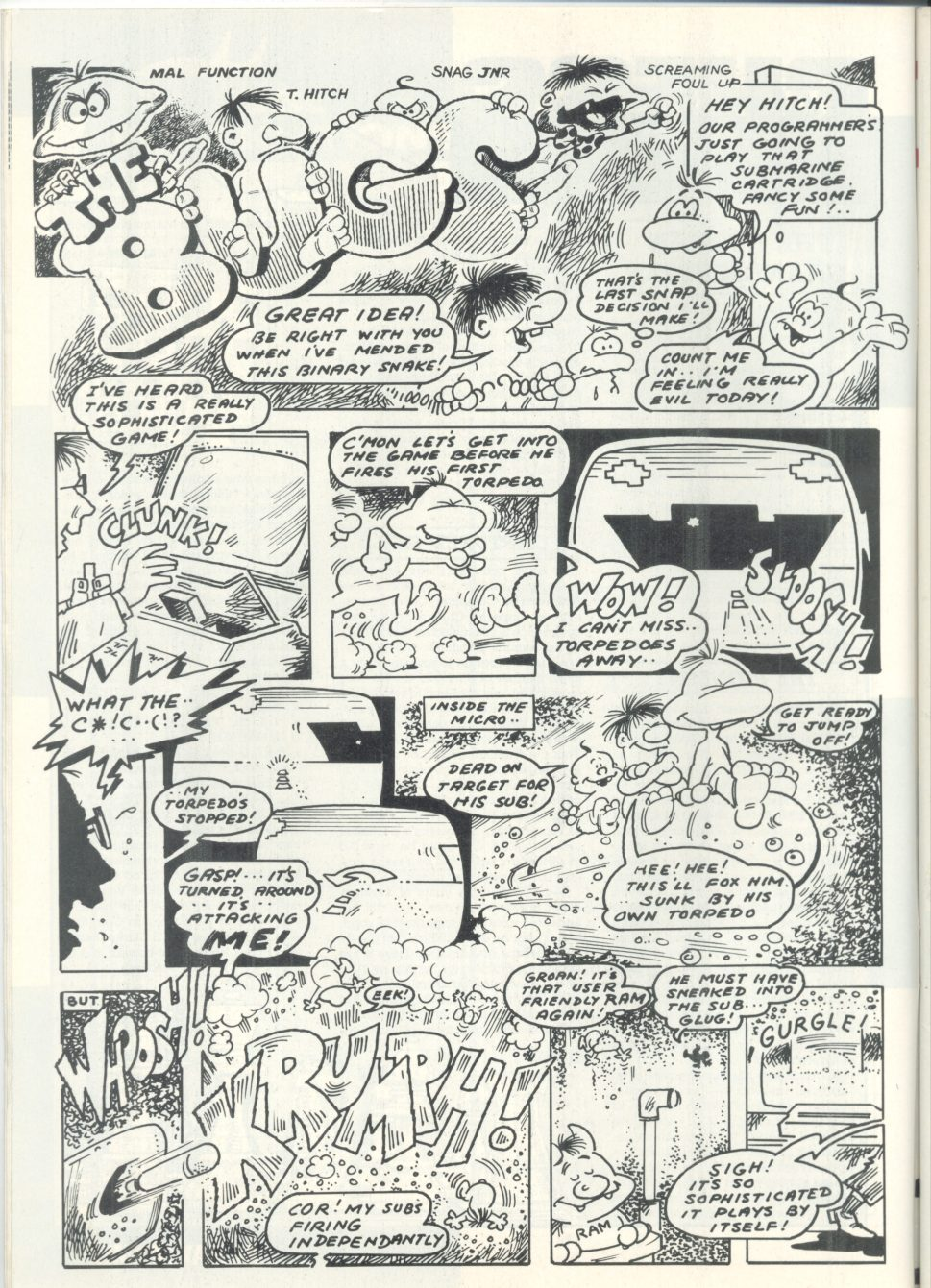
1. B-R3, QxB; (If 1. . . . Q-K1; 2. Q-B7ch is strong)
2. N-R5ch, PxN; 3. Q-N5ch, K-R1;
4. QxNch, K-N1;
5. P-K7, Q-B8ch; 6. K-B2, Q-Q7ch; 7. K-N3, Q-K6ch; 8. K-R4, and now

White wins in all variations, e.g. 8 . . . Q-K8ch; 9. KxP, Q-K7ch; 10. K-R4, Q-K8ch; 11. K-R3, Q-K6ch; 12. P-N3.

It is easy to believe that BELLE would also have found this variation, but it might have needed to examine tens of thousands of positions to do so! If you want to know more about Botvinnik's method, his 1981 conference paper is published in *Advances in Computer Chess 3*, edited by M R B Clarke (Pergamon Press, 1982) — but beware, it is far from easy reading!



BY MAX BRAMER


MAL FUNCTION
T. HITCH
SNAG JNR
SCREAMING FOUL UP
THE BUGS
HEY HITCH! OUR PROGRAMMER'S JUST GOING TO PLAY THAT SUBMARINE CARTRIDGE. FANCY SOME FUN!..
GREAT IDEA! BE RIGHT WITH YOU WHEN I'VE MENDED THIS BINARY SNAKE!
THAT'S THE LAST SNAP DECISION I'LL MAKE!
COUNT ME IN.. I'M FEELING REALLY EVIL TODAY!
I'VE HEARD THIS IS A REALLY SOPHISTICATED GAME!
CLUNK!
C'MON LET'S GET INTO THE GAME BEFORE HE FIRES HIS FIRST TORPEDO
WOW! I CAN'T MISS.. TORPEDOES AWAY..
SPLOOSH!
WHAT THE.. C*!C..(!?
INSIDE THE MICRO..
GET READY TO JUMP OFF!
..MY TORPEDO'S STOPPED!
DEAD ON TARGET FOR HIS SUB!
GASP!...IT'S TURNED AROUND ..IT'S ATTACKING ME!
HEE! HEE! THIS'LL FOX HIM ..SUNK BY HIS OWN TORPEDO
BUT
WHOOSH!
EEK!
GROAN! IT'S THAT USER FRIENDLY RAM AGAIN!
HE MUST HAVE SNEAKED INTO THE SUB.. GLUG!
GURGLE!
WRUMPH!
COR! MY SUBS FIRING INDEPENDANTLY
RAM
SIGH! IT'S SO SOPHISTICATED IT PLAYS BY ITSELF!

Announcing more exciting programs for the BBC.

Acornsoft is the software division of Acorn Computers, the company that designed and built the BBC Microcomputer. Here are four more exciting programs, all designed to get the most from your BBC Micro.

Starship Command (£9.95) is a demanding high-resolution graphics game in which you command a starship against attacking alien ships. You control the forward drive and rotational thrust of your ship, which is equipped with shields, long and short-range scanners and a sector display of the stars and alien ships.

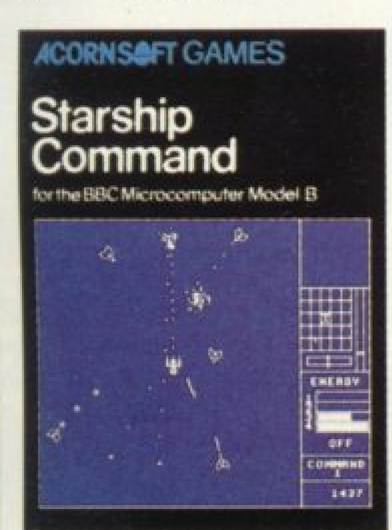
Countdown to Doom (£9.95) is a race against time as you strive to repair your damaged space ship in the corrosive atmosphere on the planet Doomawangara (Doom). Beat the clock or resign yourself to a life in the wilderness of Doom.

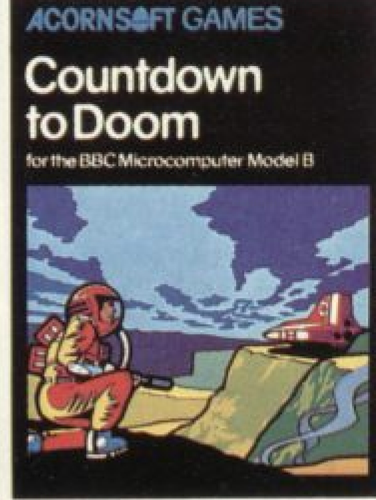
Business Games (£9.95) is a cassette containing two games designed for economics, business or general studies teaching.

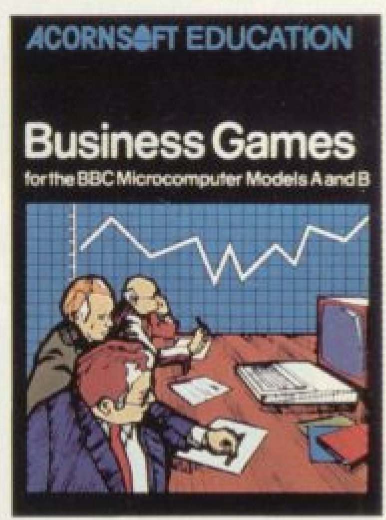
In Stokmark, up to eight players compete in buying and selling shares aided by a screen display of relevant market information.

In Telemark, players compete to dominate in the manufacture and sale of televisions. The winner is the one who makes the largest profit or controls over half the total market.

Jars (£11.90) is an educational cassette suitable for 7-13 year olds. The objective of the program is to present, what are usually thought of as purely numerical problems, in a visual way. Jars of liquid are used to visualise volume estimation and fraction problems. Success, partial success or failure is noted by a scoring system and suitable comments.









How to get Acornsoft programs.

If you're a credit card holder and would like to buy cassettes of the programs shown in this advertisement, or if you would like to know the address of your nearest stockist, just phone 01-200 0200.

Alternatively, you can buy the cassettes directly by sending off the order form below to: Acornsoft, c/o Vector Marketing, Denington Estate, Wellingborough, Northants NN8 2RL.

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Please allow 28 days for delivery.

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Jars	£11.90			SBE15
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ACORNSOFT

ARCADE

CHECKOUT U.S. STARS

ARCADE HEROES

No tips or UK record breakers this month but they'll be back next issue with Donkey Kong Junior and Mr Do planned for coverage in the near future.

Instead we're breaking away to please readers like Mark Lawrence from Dundee and Trevor Billstead from Witham, who both wrote wondering how our charts compare with the greatest video games playing nation around — America.

So we're printing the charts as taken from a U.S. magazine *Video Games* so you can compare them with the top scores in your own arcades. Don't be surprised by the size of some of them; record-breaking feats are encouraged in the U.S. and arcade owners are often persuaded to stay open so that a local champ can make his bid for national fame on a favourite machine.

I don't like to ask about the problems involving going to the lavatory but can only assume that the Missile Command and Robotron scorers mentioned below must have cast-iron bladders or **very** understanding arcade owners.

Another way around the bladder problem is to beat the game on a rota basis, as did five lads at Stevenage Bowling Centre. Simon Revill, Gary Murphy, Paul Carter, Alan Stagg and Mark Taylor recently battled their way to 4,330,640 on Missile Command before the machine was turned off.

Not quite in the U.S. class but we'd like to hear of any similar attempts. Please write to: Arcade Action, Computer & Video Games, Durrant House, 8 Herbal Hill, London EC1R 5JB.



AMERICAN HEROES

Berzerk
119,340 Joel West
Kirksville, Mo.

Centipede
15,207,353 Darren Olson
Calgary, Alberta, Can.

Dig-Dug
3,462,760 Brian Doyle
Santee, Calif.

Donkey Kong Jr.
949,200 Matthew Brass
Ottumwa, Ia.

Frenzy
4,737,820 Rik Kelly
Kenosha, Wisc.

Galaga (level D)
12,753,570 Mike Lynn
Durham, N.C.

Gorf (six men)
704,590 John Chandler
Hobbs, N.M.

Gravitar
4,722,200 Raymond Mueller
Boulder, Col.

Joust (level 5, 20,000 bonus, new chip)
1,553,600 Joe Malasarte
Ottumwa, Ia.

Kangaroo
754,400 Sam Middleton
Panama City, Fla.

Millipede
785,827 Eric Ginner
Mountain View, Calif.

Missile Command
64,696,720 Jeff Stueve
Dayton, Oh.

Moon Patrol
577,480 Eric Ginner
Mountain View, Calif.

Ms. Pac-Man
286,410 Mike Lepkosky
Houston, Tex.

Pengo (4 men)
369,450 Mark Robichek
Durban, South Africa

Q*bert
3,007,035 Richard Wilson
Woodbridge, Va.

Rally X
238,910 Joel West
Shelby, N.C.

Robotron
202,457,650 Mike Zack
West Bloomfield, Mich.

Stargate
70,283,000 Oscar Iglesias
Concord, Calif.

Super Cobra
198,470 Matt Brass
Helena, Mont.

Tempest
4,706,540 David Plumer
Regina, Saska., Can.

Tron
4,036,171 Rick Maldanado
Westland, Mich.

Zaxxon
2,138,650 Eric Burch
N. Palm Beach, Fla.

JUNGLE REVENGE IN 3D

TIP TOP

Donkey Kong in three dimensions is the fascinating idea behind Tip Top.

The game features a mischievous gorilla with a nasty line in practical jokes and a determined explorer out for revenge.

The explorer begins Tip Top asleep in his tent when the gorilla creeps up and sets fire to his toe. Enraged, our stubborn hero, pursues the creature through four screens of jungle terrain, over lakes and rivers, up hills and over bridges.

Screen one sees the gorilla stomping about on top of a cliff, while at the bottom the explorer begins his climb up to enact his revenge. Like Donkey Kong's Mario, he has the power to jump or climb but his climbs are far slower, scrambling over the next parapet.

Small monkeys frolic around the screen — seemingly harmless — and the gorilla gently rolls coconuts down the slope in time-honoured fashion.

Across a bridge above a waterfull, down a slippery slope and jumping over a ravine, the hunter is now close to his rival. But watch those monkeys.

If four or more grab hold of the explorer they lift him up and hoist him over the nearest cliff. If, instead, he finds the gorilla's hideout onto the next screen.

This features snakes and narrow strips of land by a lake. While screen three takes place in a blue plain filled with small holes and rampaging rhinos. The holes are haunted by a cuddly (but none-the-less deadly) critter who may grab you as you dive in to escape the rhino charges.

The final screen offers up a large river full of logs, crocs and hippos a vastly superior Frogger with the hippos also travelling across the river as well as up and down it.

On this screen the gorilla finally gets his come-uppance as a handy fire brand is set beneath him.

ACTION



Our appeal for top pinball scores brought a prompt reply from Keith Hatton of Liverpool. He sent us a detailed rundown of his top scores on all the electronic machines manufactured since 1976/77! They are all there — Bally, Williams, Gottlieb, Stern and Zaccaria — an amazing list of over 40 machines played at various locations around the country.

There are too many top scores to list here, but Keith reckons his best scores include 7,241,510 on Bally's Fathom, 5,352,050 on Medusa, also from Bally. Keith racked up 7,421,770 on Gottlieb's Spirit, 2,536,200 on Stern's Seawitch, 7,104,690 on a Williams Jungle Lord and 20,421,210 on Zaccaria's Pinball Champ 82 at a Liverpool arcade.

Keep the top scores coming in please.

Meanwhile on the new pinballs front Bally are bringing out a baseball theme game called Grand Slam. This can be played by a combination of two or four players — but other information from the pinball giant about this new release is thin on the ground.

On the American scene Zaccaria have introduced Pinball Champ, a game which follows the trend for personal hi-fi by including a headphone plug which allows players to listen to comments from the machine! Pinball Champ has an elevated main ball runway which allows an enlarged playfield within a standard size cabinet.

The machine also includes a spinning target alley where high-speed shots collect high score values.

Remember keep those high scores coming in!



BEHIND ENEMY LINES

FRONT LINE

Behind enemy lines and armed only with a gun and a few grenades, your mission is to force the opposing generals to surrender from their fort HQ.

You are, of course, single-handed and will have to take on whole platoons of enemy snipers and several crack panzer divisions . . . It's enough to make John Wayne think twice!

You start off on foot firing at the enemy. You can hide behind bushes as you battle your way up the screen.

The opposition are also armed with guns and grenades, they make good use of bushes for cover and they greatly outnumber you.

Landmines are deadly and have to be avoided in your rush up to the panzer ranks.

Now your gun is useless and you have to lob grenades at the tanks and avoid their fire.

To put yourself on equal terms you can make use of the odd blue tank which the opposition generals have carelessly left lying around the battlefield. Tanks come in two varieties: small and speedy or large and well-armoured.

The larger tanks also offer greater artillery fire but you have to beware of grenades thrown from fox-holes or the other tanks. Two hits will disable your tank but you can jump clear before the final explosion and look for your next tank.

When the fort is in sight, you know your mission is nearly over. Leaving the tank you can storm the enemy HQ and try to lob a grenade over the walls and into the general's conference centre.

If this is achieved, a wounded general appears on the battlements waving a white flag to acknowledge your victory.

Front Line has been out for a while already but has met with a cool reception from arcade players because it is initially difficult to get past the snipers.

This is a pity because the action really takes off when you climb into your tank, worth persevering with if you do get the chance.

AWAKEN RUDELY!

BUCK ROGERS

Buck Rogers, frozen in space for half a millennium, wakes up to find himself ranged against the forces from the Planet of Zoom.

You can chronicle his adventures as he tries to battle through to take on the enemy source ship in the first of a possible series of video games, Buck Rogers and Planet of Zoom.

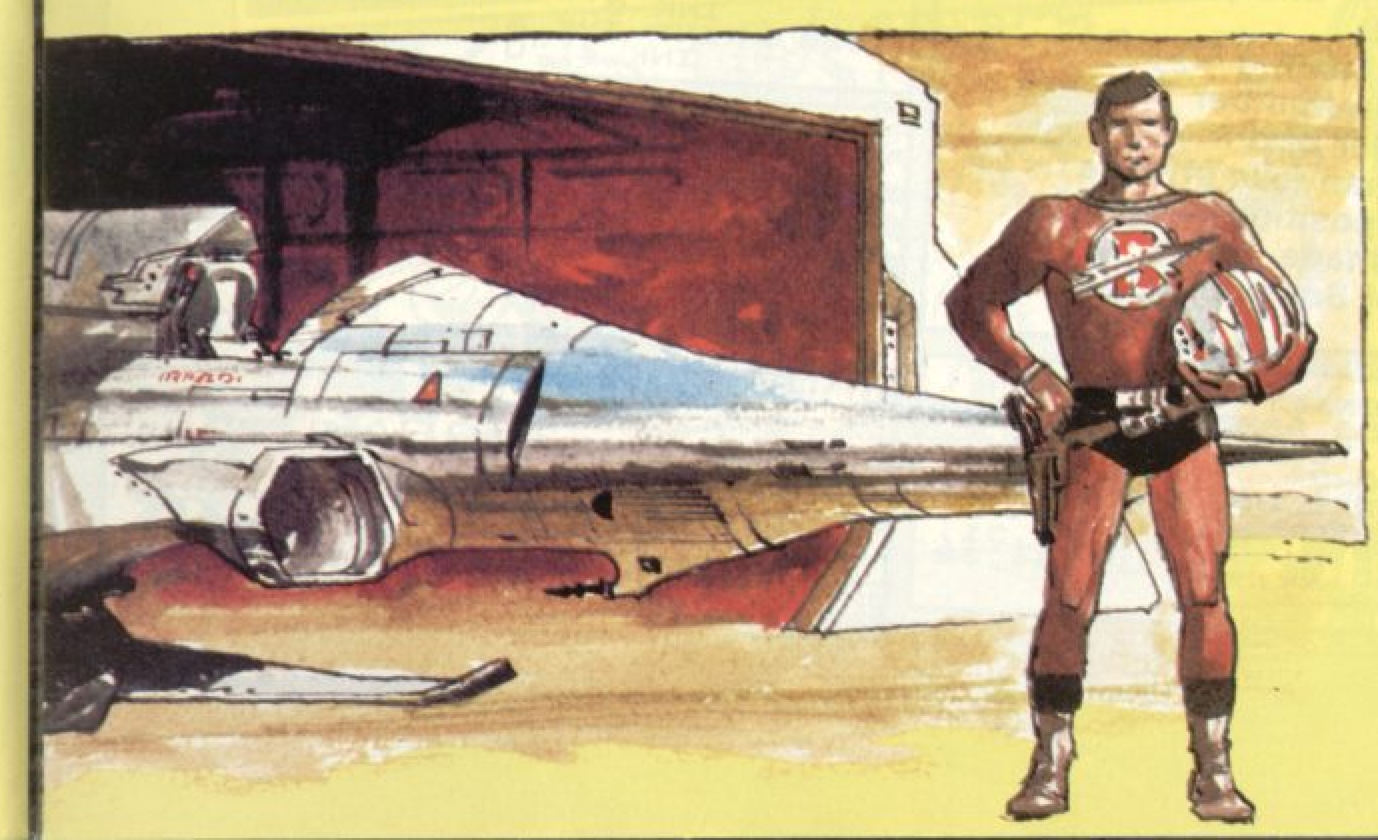
It's space warfare as seen from behind the twin jets of Buck's ship with you at the controls.

The battle begins in a heavily armed channel of an artificial planet, reminiscent of the Death Star in the Star Wars saga. Enemy ships hurtle towards you and the Buck Rogers in you, rises to the challenge as your ship twists away from Zoom's alien ships, firing and dodging.

A two-level speed control, a pilot's joystick and a fire button are at your fingertips as the scenes change to deep space, the formidable smasher tunnels and the spires of Cosmic City.

The enemy ships come in all shapes and sizes.

Anyone who has enjoyed the TV series will be interested to see just how it converts to the video screen!



Illustrations: Jon Davis

DONKEY KONG JNR.







Surprising how heroes suddenly become villains in the arcade world. Take Mario for example. There he was in Donkey Kong playing the gallant knight in a boiler suit racing to save the fair maiden from the clutches of our favourite giant gorilla.

But here in the sequel to that memorable battle of wits Mario has become the villain. He has caged poor old Kong and refuses to let him go. So little Kong Junior sets out to rescue his dad.

Donkey Kong Junior has to climb vines to reach the cage and rescue his illustrious father. But there are nasty jungle creatures called Snappers which dash around attempting to knock little Kong off. Kong can jump over the Snappers as long as he is facing them. Then there is the nasty bird which will also attempt to prevent Kong completing his mission. On the second, third and fourth levels fruits appear. Kong can leap at these and send them plummeting to the jungle floor — if they hit a bird or a Snapper then 100 points will be added to your score.

The number of Snappers increases each time Donkey Kong Junior manages to rescue his dad. To climb a vine you must position Kong Junior right beneath it, and move it. You cannot leap on to a vine.

Control keys are: "5"=left, "8"=right, "6"=down, "7"=up, "V" or "N"=jump.

HS-high score
S-score
C-if 1, fruit hit bird or snapper
BIRD 1, BIRD 2 — bird positions
LIVES—lives left
H—direction of man
COUNT—Screen number
X$—shape under bird
CHECK—if 8, man falls off vine
A,B—Snapper positions
A$—Snapper shape
D—direction of Snapper

```
   1 REM      DONKEY KONG J.R.
         © 1983 ROBERT TURNER
  10 FOR a=144 TO 164
  20 FOR x=0 TO 7
  28 READ b: POKE USR CHR$ a+x,b
: NEXT x: NEXT a
  40 DATA 0,0,0,6,15,15,6,15,31,
47,47,111,25,48,96,112,128,64,32
,0,0,128,128,192
  50 DATA 0,0,0,96,240,240,96,24
0,248,244,244,242,152,12,6,14,1,
2,4,0,1,1,1,3
  60 DATA 255,254,252,252,252,24
8,248,248,255,127,63,63,63,31,31
,31
  70 DATA 0,1,3,4,12,240,165,255
,0,128,192,32,48,15,165,255
  80 DATA 3,7,7,3,15,31,55,39,0,
128,128,0,192,224,176,144,39,23,
12,24,24,24,56,0,144,160,192,96,
96,96,112,0
  90 DATA 2,2,1,1,2,4,2,2,63,207
,15,15,24,48,96,192,253,243,240,
240,24,12,6,3
 100 DATA 1,2,2,4,1,3,6,7,128,64
,64,32,128,192,96,224,8,16,48,12
0,120,48,0,0
 110 DATA 0,226,115,54,248,0,0,0
 120 GO SUB 1000
1000 INK 0: PAPER 7: BORDER 5: C
LS
1010 LOAD ""

   1 LET HS=0
   2 LET C=0: LET X$=" ": LET BI
RD2=3: LET S=0: LET LIVES=3: LET
 H=1: POKE 23658,8: LET SNAPPERS
=1: LET COUNT=1
1000 CLS
1010 PRINT AT 3,0; INK 2;"KL": P
RINT AT 4,0; INK 3;"MN": INK 2:
FOR W=0 TO 15 STEP 4: PLOT W,136
: DRAW 0,15: NEXT W: DRAW -10,0
1015 INK 0
1020 PRINT AT 0,0;"[redacted]"; INK 0;"
     "; INK 4;"O"; INK 0;"  "; INK
 "; INK 4;"O"; INK 0;"   "; INK 4;"O";
3;"T"; INK 0;"
1030 PRINT INK 0;"
     "; INK 4;"O"; INK 0;"       ";
```



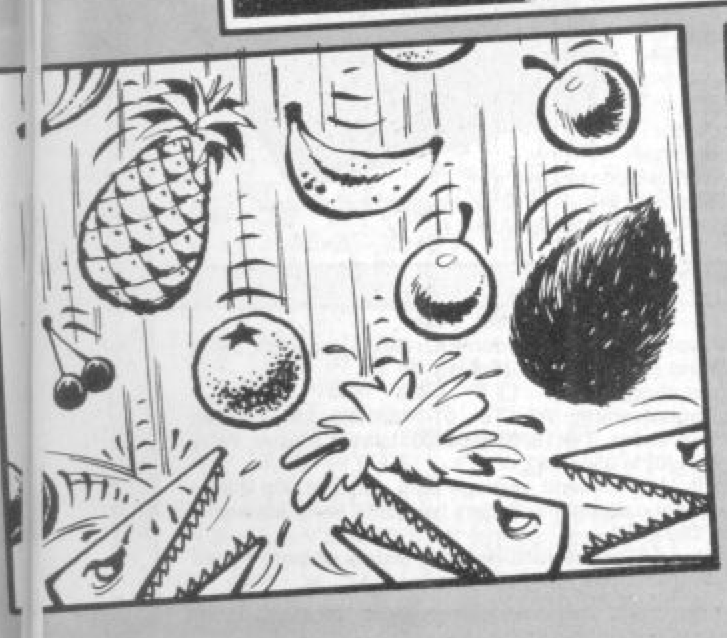
Illustrations: Terry Rogers



```
INK 0;"        "; INK
 INK 4;"O"; INK 0;"
4;"O"; INK 0;'': PRINT TAB 0;"[redacted]
1040 PRINT
[redacted]G"; IN
"; INK 4;"O
K 4;"OO"; INK 0;"
"; INK 3;"T"; INK 0
"; INK 0;"         "; INK 0;"
 "; INK 4;"O"; INK 0;"; INK 4;
 INK 4;"O"; INK 0;"      "; INK 4;"OO"
"O"; INK 0;"         "; INK 4;"
1050 PRINT INK 0;"      "; INK 4;"O"; I
O"; INK 0;"        "; INK 4;"O"; INK 0;
NK 0;"
"; INK 4;"O"; INK 0;
"; INK 4;"OO"; INK 0;
1060 PRINT  '': PRINT TAB 0; INK
 4;"OO"; INK 0;"H[redacted]
 INK 4;"OO"; INK
[redacted]
"; INK 4;"O"; INK 0;"
 0;"       "; INK 0;"     "; INK
"; INK 4;"O"; INK 0;"   "; INK 3;"T
4;"O"; INK 0;"    "; INK 4;"O"; INK 0;
"; INK 0;"       "; INK 4;"OO";
"      "; INK 4;"        "; INK 4;"
1070 PRINT INK 0;"
"; INK 4;"O"; INK
O"; INK 0;"
 0;"     "; INK 4;"O"; INK 0;"
   "; INK 4;"O"; INK 0;

"  '': PRINT TAB 0;"[redacted]
1080 PRINT
[redacted]G"; INK
"; INK 4;
 4;"OO"; INK 0;"       "; INK 4;"O";
"O"; INK 0;"     "; INK 4;"O"; INK 0
INK 0;"       "; INK 4;"OO"
;"                          "; INK
1090 PRINT INK 0;"       "; INK 4;"O"
4;"O"; INK 0;"       "; INK 4;"O"; INK
; INK 0;"        "; INK 4;"OO"; INK 0
 0;"
;
1100 PRINT ''"[redacted]
```

```
2000 LET CHECK=0: LET X=18: LET
Y=0: DIM A(5): DIM B(5): DIM A$(
5): DIM D(5): IF SNAPPERS>5 THEN
 LET SNAPPERS=5
2080 FOR W=1 TO 5: LET A(W)=(5*W
)-1: LET B(W)=(W*5)+6
2090 IF W/2=INT (W/2) THEN LET A
$(W)="J": LET D(W)=-2
2100 IF W/2<>INT (W/2) THEN LET
A$(W)="I": LET D(W)=2
2110 NEXT W
2120 LET A(5)=14: LET B(5)=6: FO
R W=1 TO LIVES: INVERSE 1: PRINT
 AT 20,W*2;"A";AT 21,W*2;"BC": N
EXT W
2230 PRINT AT 20,20;"SCORE:";S;A
T 21,19;"HI-SCORE:";HS: INVERSE
0: PRINT AT X,Y;"A";AT X+1,Y;"BC
"
2250 FOR W=1 TO SNAPPERS: PRINT
AT A(W),B(W); INK 1;A$(W): NEXT
W
3010 IF INKEY$="8" THEN GO SUB 4
000: LET H=1
3020 IF INKEY$="5" THEN GO SUB 4
040: LET H=0
3030 IF INKEY$="7" THEN GO SUB 4
080
3040 IF INKEY$="6" THEN GO SUB 4
130
3050 IF INKEY$="N" OR INKEY$="V"
 THEN GO TO 4180
3060 IF ATTR (x,y-1)=58 THEN GO
TO 5000
3090 FOR W=1 TO SNAPPERS: PRINT
AT A(W),B(W);" ": LET B(W)=B(W)+
D(W): IF B(W)<4 THEN LET A(W)=A(
W)+5: LET D(W)=2: LET A$(W)="I"
3100 IF B(W)>29 THEN LET A(W)=A(
W)+5: LET D(W)=-2: LET A$(W)="J"
3110 IF A(W)>19 THEN LET A(W)=4
3120 PRINT AT A(W),B(W); INK 1;A
$(W)
3130 IF ATTR (X,Y)<>184 THEN IF
ATTR (X+1,Y)=57 OR ATTR (X+1,Y+1
)=57 THEN GO TO 7000
3140 BEEP .05,-40: NEXT W
3160 PRINT AT 20,26; INVERSE 1;S
: IF ATTR (X,Y)=184 THEN LET CHE
CK=CHECK+1
3165 IF ATTR (X,Y)<>184 THEN LET
 CHECK=0
3170 IF CHECK=8 THEN GO SUB 4130
: LET CHECK=0
3180 IF CHECK=0 AND BIRD2=3 THEN
 GO TO 3000
3190 IF BIRD2=3 THEN LET BIRD1=2
+(5*(INT (RND*4)))
3200 PRINT AT BIRD1,BIRD2;" ": I
F X$="O" THEN PRINT AT BIRD1,BIR
D2; INK 4;"O"
3220 LET BIRD2=BIRD2+1: LET X$="
": IF ATTR (BIRD1,BIRD2)=60 THE
N LET X$="O"
3225 IF ATTR (BIRD1,BIRD2)=184 T
HEN GO TO 7000
3230 PRINT AT BIRD1,BIRD2; INK 1
;"U": IF BIRD2<>30 THEN GO TO 30
00
```







BY ROBERT TURNER

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Forth	-1D-24K-YL29G	£62.95
*Frogger	-1C-16K-KB68Y	£22.95
Galaxian	-1E-16K-KF11M	£29.95
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*Hellfire Warrior	-1C-32K-KF02C	£27.45
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*Moon Shuttle	-1C-16K-KF22Y	£27.50
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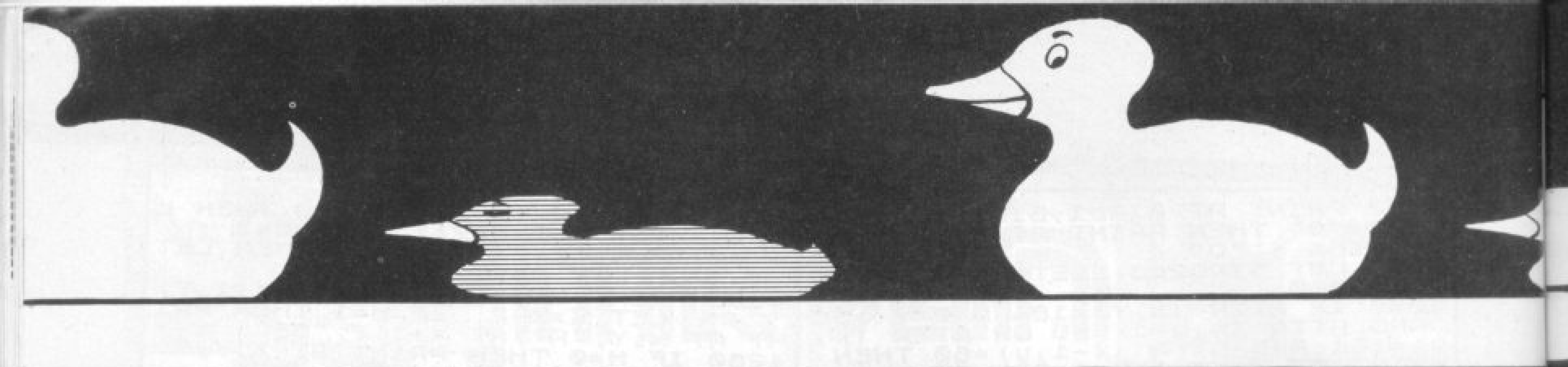
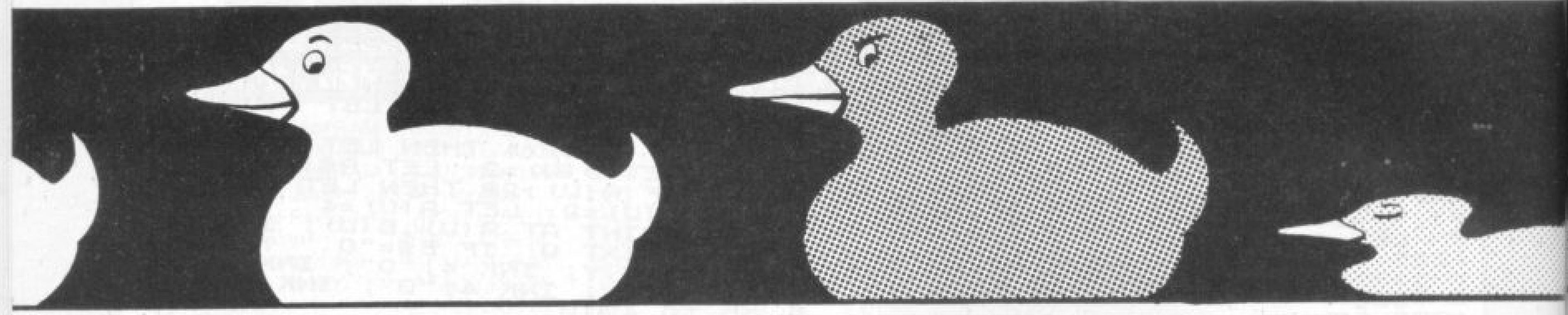
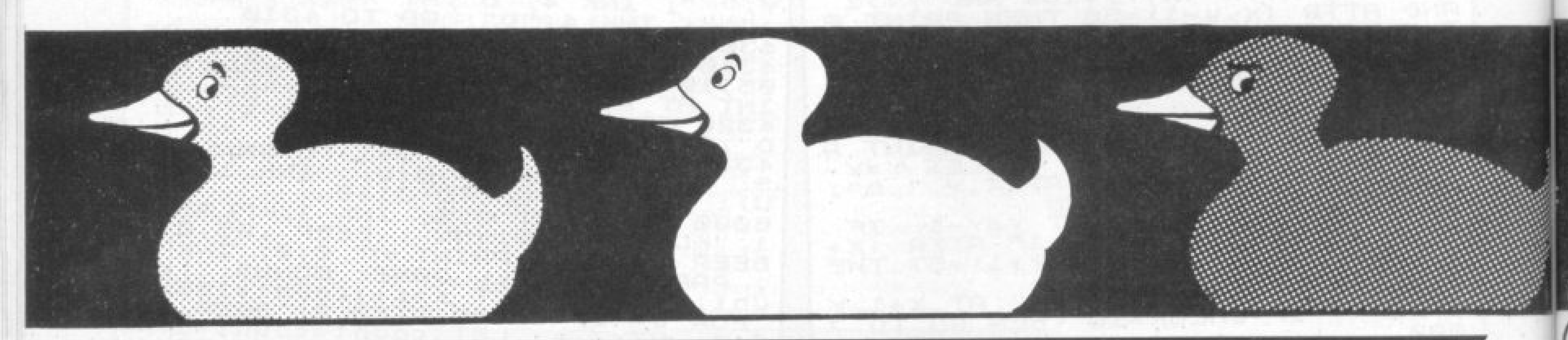
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```
3250 PRINT AT BIRD1,BIRD2;" ": I
F X$="O" THEN PRINT AT BIRD1,BIR
D2; INK 4;"O"
3260 LET BIRD2=3: LET X$=" ": GO
 TO 3000
4000 IF ATTR (X,Y)=184 AND Y<>30
 AND ATTR (x,y-1)=56 OR ATTR (x,
y)=184 AND ATTR (x-1,y)=60 THEN
PRINT AT X,Y; INK 4;"O";AT X+1,Y
;"O": LET Y=Y+1: LET X=X+2: PRIN
T AT X,Y;"A";AT X+1,Y;"BC": RETU
RN
4010 IF ATTR (X,Y-1)=60 AND Y<>3
0 AND ATTR (x,y)=184 THEN PRINT
AT X,Y;" ";AT X+1,Y;" ": LET Y=Y
+1: LET X=X+2: PRINT AT X,Y;"A";
AT X+1,Y;"BC": RETURN
4020 IF Y<>30 THEN LET Y=Y+1: IF
 ATTR (X,Y)<>184 THEN IF ATTR (X
+1,Y)=57 OR ATTR (X+1,Y+1)=57 TH
EN LET CHECK=10
4025 PRINT AT X,Y-1;" A";AT X+1,
Y-1;" BC": IF CHECK=10 THEN GO T
O 7000
4030 RETURN
4040 IF ATTR (X,Y)=184 AND Y<>1
AND ATTR (x,y-1)=56 THEN PRINT A
T X,Y; INK 4;"O";AT X+1,Y; INK 4
;"O": LET Y=Y-1: LET X=X+2: PRIN
T AT X,Y;" D";AT X+1,Y;"FE": RET
URN
4050 IF ATTR (X,Y-1)=60 AND Y<>1
 AND ATTR (x,y)=184 THEN PRINT A
T X,Y;" ";AT X+1,Y;" ": LET Y=Y-
1: LET X=X+2: PRINT AT X,Y;" D";
AT X+1,Y;"FE": RETURN
4060 IF Y<>1 THEN LET Y=Y-1: IF
ATTR (X,Y)<>184 THEN IF ATTR (X+
1,Y)=57 OR ATTR (X+1,Y+1)=57 THE
N LET CHECK=10
4065 PRINT AT X,Y;" D ";AT X+1,Y
;"FE ": IF CHECK=10 THEN GO TO 7
000
4070 RETURN
4080 IF ATTR (X-1,Y)=60 AND ATTR
 (X,Y)=56 THEN PRINT AT X,Y;" "
;AT X+1,Y;" ": LET X=X-2: PRINT
 AT X,Y; OVER 1; FLASH 1;"D";AT
X+1,Y;"Q": RETURN
4090 IF ATTR (X-1,Y-1)=60 AND AT
TR (X,Y-1)=56 THEN PRINT AT X,Y;
" ";AT X+1,Y;" ": LET X=X-2: P
RINT AT X,Y; FLASH 1; OVER 1;"A"
;AT X+1,Y;"P": RETURN
4100 IF ATTR (X-1,Y+1)=60 AND AT
TR (X,Y+1)=184 THEN PRINT AT X,Y
; INK 4;"O";AT X+1,Y;"O": LET X=
X-3: PRINT AT X,Y;" A";AT X+1,Y;
"FE": RETURN
4110 IF ATTR (X-1,Y)=60 AND ATTR
 (X,Y)=184 THEN PRINT AT X,Y; IN
K 4;"O";AT X+1,Y;"O": LET X=X-3:
 PRINT AT X,Y;"A";AT X+1,Y;"BC"
4120 RETURN
4130 IF ATTR (X,Y)=184 AND ATTR
(X,Y-1)=60 AND ATTR (X-1,Y)<>60
THEN PRINT AT X,Y;" ";AT X+1,Y;"
 ": LET X=X+2: PRINT AT X,Y;" D"
;AT X+1,Y;"FE": RETURN
4140 IF ATTR (X,Y)=184 AND ATTR
(X,Y-1)=60 OR ATTR (X,Y)=184 THE
N PRINT AT X,Y; INK 4;"O";AT X+1
,Y;"O": LET X=X+2: PRINT AT X,Y;
"A";AT X+1,Y;"BC": RETURN
4150 IF ATTR (x,y)=56 AND ATTR (
x+2,y)=60 THEN PRINT AT x,y;" "
;AT x+1,y;" ": LET x=x+3: PRINT
 AT x,y; FLASH 1; OVER 1;"D";AT
x+1,y;"Q": RETURN
4170 RETURN
4180 IF ATTR (X,Y)=184 OR Y=30 O
R Y=1 THEN GO TO 3060
4181 LET B$=" ": IF ATTR (X-2,Y
)=60 THEN LET B$="O "
4185 IF ATTR (X-2,Y+1)=60 THEN L
ET B$=" O"
4186 IF ATTR (X-1,Y+1)=57 OR ATT
R (X-1,Y)=57 THEN PRINT AT X,Y;"
 ";AT X+1,Y;" ": LET X=X-2: PR
INT AT X,Y;"A";AT X+1,Y;"BS": GO
 TO 7000
4190 IF ATTR (X-2,Y+1)=59 THEN L
ET N=X-2: LET M=Y+1: LET C=1
4191 IF ATTR (X-2,Y)=59 THEN LET
 N=X-2: LET M=Y: LET C=1
4195 PRINT AT X,Y;" ";AT X+1,Y;
" ": LET X=X-2: IF H=1 THEN PRI
NT AT X,Y;"A";AT X+1,Y;"BS"
4200 IF H=0 THEN PRINT AT X,Y;"
D";AT X+1,Y;"RE"
4210 IF C=1 THEN GO SUB 6000
4230 FOR W=1 TO SNAPPERS: PRINT
AT A(W),B(W);" ": LET B(W)=B(W)+
D(W): IF B(W)>29 THEN LET A(W)=A
(W)+5: LET D(W)=-2: LET A$(W)="J
": LET B(W)=30
4240 IF B(W)<4 THEN LET A(W)=A(W
)+5: LET D(W)=2: LET A$(W)="I"
4245 IF A(W)>20 THEN LET B(W)=3:
 LET D(W)=2: LET A(W)=4
4250 PRINT AT A(W),B(W); INK 1;A
$(W): NEXT W: IF B$="O " THEN PR
INT AT X,Y; INK 4;"O"; INK 0;" "
;AT X+1,Y; INK 4;"O"; INK 0;" ":
 GO TO 4310
4295 IF B$=" O" THEN PRINT AT X,
Y;" "; INK 4;"O";AT X+1,Y; INK 0
;" "; INK 4;"O": GO TO 4310
4300 PRINT AT X,Y;B$;AT X+1,Y;B$
4310 LET Y=Y+(H=1)-(H=0): BEEP .
05,10: LET X=X+2: IF H=1 THEN PR
INT AT X,Y;"A ";AT X+1,Y;"BC"
4320 IF H=0 THEN PRINT AT X,Y;"
D";AT X+1,Y;"FE"
4330 LET C=0: FOR W=1 TO SNAPPER
S: PRINT AT A(W),B(W); INK 1;A$(
W): NEXT W: GO TO 3140
5000 PRINT AT 3,0; INK 1; FLASH
1;"KL";AT 4,0;"MN": BEEP .05,0:
BEEP .05,20: PRINT AT 0,0; INK 4
; PAPER 0;"WELL DONE! BONUS ";co
unt;"*100": LET s=s+(count*100):
 FOR a=-50 TO 50 STEP 2: BEEP .0
2,a: NEXT a: LET count=count+1:
LET snappers=snappers+1: GO TO 1
000
6000 BEEP .05,10: BEEP .05,20: F
OR W=X TO 19: IF ATTR (N,M)=57 T
HEN BEEP .01,10: BEEP .01,20: LE
T S=S+100: GO SUB 9000
6030 PRINT AT N,M; INK 3;"T": BE
EP .05,W: PRINT AT N,M;" ": IF W
/5=INT (W/5) THEN PRINT AT N,M;"
▓"
6050 LET N=N+1: NEXT W: RETURN
7000 PRINT AT X,Y; FLASH 1; OVER
 1;" ";AT X+1,Y;" ": FOR W=-25
 TO 50 STEP 2: BEEP .05,W: BEEP
.05,W-25: NEXT W: LET LIVES=LIVE
S-1
7010 IF LIVES<1 THEN GO TO 8000
7020 GO TO 1000
8000 PRINT AT 0,0;"HIT ANY KEY T
O RESTART": IF HS<S THEN LET HS=
S
8010 IF INKEY$<>"" THEN GO TO 80
10
8020 IF INKEY$<>"" THEN GO TO 2
8030 GO TO 8020
9000 IF N=BIRD1 AND M=BIRD2 THEN
 LET BIRD2=3: RETURN
9010 IF N=A(1) AND M=B(1) THEN L
ET A(1)=4: LET B(1)=4: LET D(1)=
2: LET A$(1)="I": RETURN
9020 IF N=A(2) AND M=B(2) AND SN
APPERS>1 THEN LET A(2)=4: LET B(
2)=4: LET D(2)=2: LET A$(2)="I":
 RETURN
9030 IF N=A(3) AND M=B(3) AND SN
APPERS>2 THEN LET A(3)=4: LET B(
3)=4: LET D(3)=2: LET A$(3)="I":
 RETURN
9040 IF N=A(4) AND M=B(4) AND SN
APPERS>3 THEN LET A(4)=4: LET B(
4)=4: LET D(4)=2: LET A$(4)="I":
 RETURN
9050 IF N=A(5) AND M=B(5) AND SN
APPERS>4 THEN LET A(5)=4: LET B(
5)=4: LET D(5)=2: LET A$(5)="I":
 RETURN
```

BY NIGEL PERCY

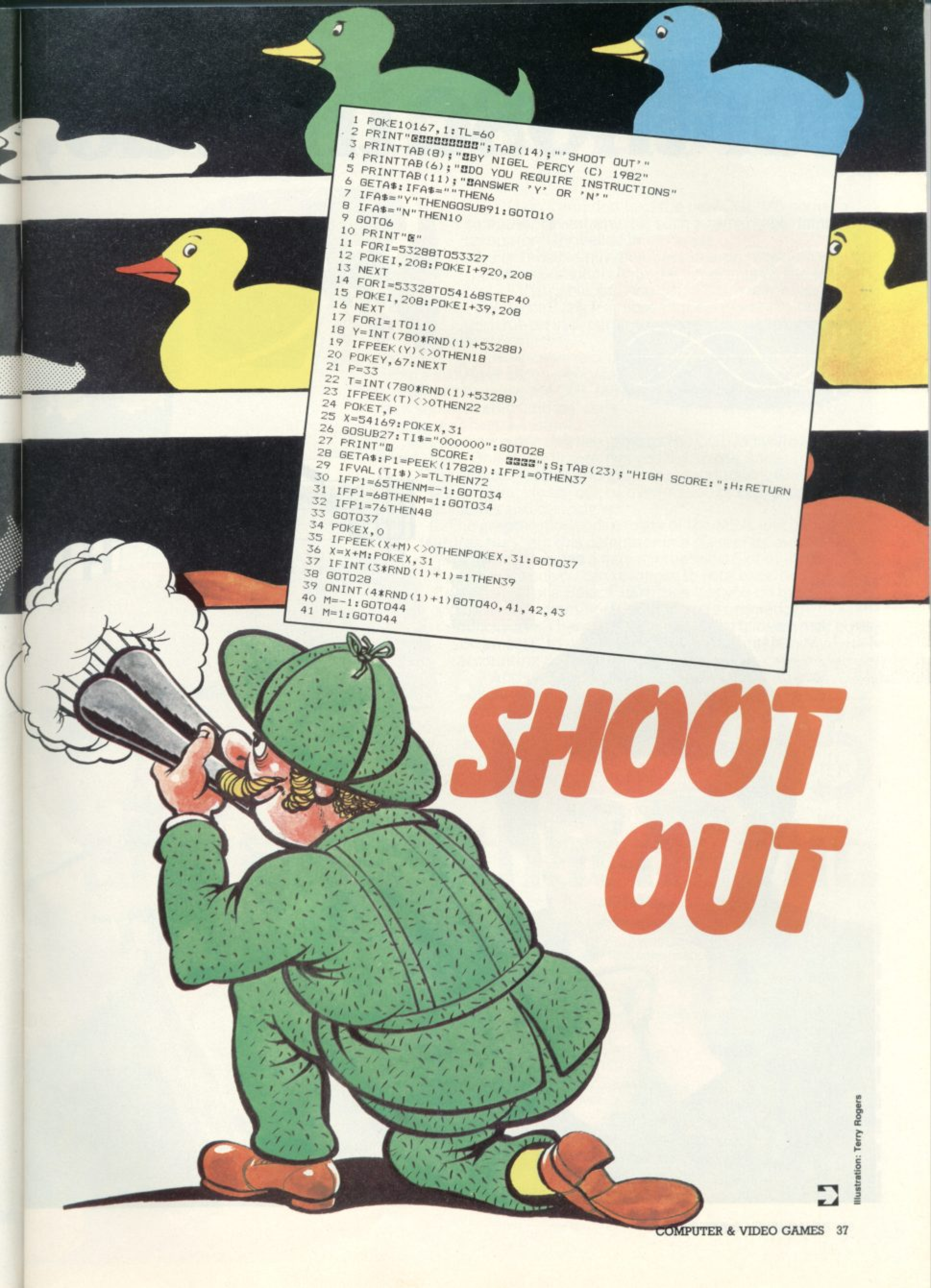
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USR (68) — Starts a sound after a value other than zero has been poked into locations 4514 or 4513
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USR (62) — Emits a short beep
USR (3494) — Stops some of the screen noise when laser is fired
POKE 10167,1 — Switches off the peek protect on Sharp Basic to allow Peek (17828)
PEEK (17828) — Returns the ASC value of the current key being pressed (for continuous movement of laser)

List of main variables
TL — Time limit of game in seconds
Y — Random position of blocks
P — Target poke code
T — Position of target
X — Position of laser gun
P1 — Movement key input
TI$ — Internal timer
F — Position of laser bullet
H — High score
F$ — Message which is flashed on screen

If you like taking pot shots at those bobbing ducks and targets you find in fairground shooting galleries you'll enjoy this game. The object is to shoot down as many targets within one minute as you can. Each target is worth 100 points — and if you shoot down all nine you'll be rewarded with a 500 point bonus and another crack at the game. However, each time you win an extra go the time limit gets shorter. The targets are represented by the numbers 1-9. They appear at random among a "battlefield" of blocks. If you hit a block with a blast from your laser gun instead of a target number you will lose 10 points — and valuable time. Once one target is hit another appears to take its place until you have destroyed all nine. Your score and the high score are displayed throughout the game.

You'll be hooked from the moment you start blasting away — those targets have an annoying habit of avoiding you!



```
1 POKE10167,1:TL=60
2 PRINT"■■■■■■■■■";TAB(14);"'SHOOT OUT'"
3 PRINTTAB(8);"■BY NIGEL PERCY (C) 1982"
4 PRINTTAB(6);"■DO YOU REQUIRE INSTRUCTIONS"
5 PRINTTAB(11);"■ANSWER 'Y' OR 'N'"
6 GETA$:IFA$=""THEN6
7 IFA$="Y"THENGOSUB91:GOTO10
8 IFA$="N"THEN10
9 GOTO6
10 PRINT"■"
11 FORI=53288TO53327
12 POKEI,208:POKEI+920,208
13 NEXT
14 FORI=53328TO54168STEP40
15 POKEI,208:POKEI+39,208
16 NEXT
17 FORI=1TO110
18 Y=INT(780*RND(1)+53288)
19 IFPEEK(Y)<>0THEN18
20 POKEY,67:NEXT
21 P=33
22 T=INT(780*RND(1)+53288)
23 IFPEEK(T)<>0THEN22
24 POKET,P
25 X=54169:POKEX,31
26 GOSUB27:TI$="000000":GOTO28
27 PRINT"■     SCORE:     ■■■■";S;TAB(23);"HIGH SCORE:";H:RETURN
28 GETA$:P1=PEEK(17828):IFP1=0THEN37
29 IFVAL(TI$)>=TLTHEN72
30 IFP1=65THENM=-1:GOTO34
31 IFP1=68THENM=1:GOTO34
32 IFP1=76THEN48
33 GOTO37
34 POKEX,0
35 IFPEEK(X+M)<>0THENPOKEX,31:GOTO37
36 X=X+M:POKEX,31
37 IFINT(3*RND(1)+1)=1THEN39
38 GOTO28
39 ONINT(4*RND(1)+1)GOTO40,41,42,43
40 M=-1:GOTO44
41 M=1:GOTO44
```

SHOOT OUT

Illustration: Terry Rogers

For those that do,



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```
42 M=-40:GOTO44
43 M=40
44 POKET,0
45 IFPEEK(T+M)<>0THENPOKET,P:GOTO28
46 IFT+M>54089THENPOKET,P:GOTO28
47 T=T+M:POKET,P:GOTO28
48 F=X-40
49 POKEF,0
50 IFPEEK(F-40)<>0THEN53
51 F=F-40:USR(3494):POKEF,121
52 POKE4514,1:USR(68):USR(71):GOTO49
53 IFPEEK(F-40)=208THEN39
54 IFPEEK(F-40)=67THENPOKEF-40,0:S=S-10:GOSUB27:GOTO39
55 S=S+100:GOSUB27
56 FORDL=1TO30
57 POKET,INT(50*RND(1)+188):POKE4513,INT(255*RND(1)+1):USR(68):NEXT:USR(71)
58 POKET,0
59 P=P+1:IFP=42THEN63
60 T=INT(780*RND(1)+53288)
61 IFPEEK(T)<>0THEN60
62 POKET,P:GOTO28
63 F$="              WELL DONE ... !!!"
64 PRINT"■":GOSUB85
65 PRINT"■WELL DONE YOU HAVE DESTOYED ALL THE"
66 PRINT"■TARGETS AND YOU HAVE RECIEVED A BONUS"
67 PRINT"■OF 500 POINTS AND AN EXTRA GO."
68 TL=TL-10:IFTL<=10THENTL=10
69 PRINT"■■      PRESS [SPACE] KEY FOR EXTRA GO"
70 GETA$:IFA$=" "THEN10
71 GOTO70
72 F$="       YOU HAVE RUN OUT OF TIME..!!"
73 PRINT"■":GOSUB85
74 PRINT"■BAD LUCK!!! YOU HAVE RUN OUT OF TIME"
75 PRINT"■BUT YOU SCORED";S;" POINTS"
76 IFS>HTHENH=S
77 S=0:TL=60
78 PRINT"■DO YOU WANT ANOTHER GAME (Y OR N)"
79 GETA$:IFA$=""THEN79
80 IFA$="Y"THEN10
81 IFA$="N"THEN83
82 GOTO79
83 PRINT"■■■■■■■■■■■■■";TAB(9);"THANKS FOR PLAYING."
84 END
85 FORI=1TO5
86 PRINT"■■■■■■■■■■■■■";F$:USR(62)
87 FORDL=1TO150:NEXT
88 PRINT"■"
89 FORDL=1TO150:NEXT
90 NEXTI:RETURN
91 PRINT"■";TAB(14);"'SHOOT OUT'"
92 PRINTTAB(14);" ————— ———"
93 PRINT"■ The object of this game is to shoot"
94 PRINT"■as many targets (each worth 100 points)"
95 PRINT"■in 1 minute. The targets are represented "
96 PRINT"by the numbers 1-9 depending on how"
97 PRINT"■many you have shot down."
98 PRINT"■If you shoot all nine in one minute"
99 PRINT"■you will receive a bonus of 500 points"
100 PRINT"■and an extra go - every time you"
101 PRINT"■receive an extra go your time limit"
102 PRINT"■will decrease by ten seconds."
103 PRINT"■PRESS [SPACE] FOR FURTHER INSTRUCTIONS"
104 GETA$:IFA$=" "THEN106
105 GOTO104
106 PRINT"■To move your laser base you use the"
107 PRINT"■following keys:-"
108 PRINT"■          A - LEFT        D - RIGHT"
109 PRINT"■You use key 'L' to fire the laser          ■beam."
110 PRINT"■The targets are moving randomly in a"
111 PRINT"■maze which is made up of '■'s and"
112 PRINT"■each time you destroy one of these"
113 PRINT"■blocks your score is decremented by"
114 PRINT"■ten points."
115 PRINT"■          PRESS [SPACE] TO PLAY"
116 GETA$:IFA$=" "THENRETURN
117 GOTO116
```

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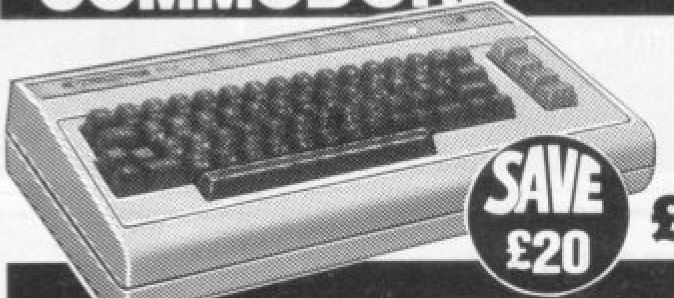
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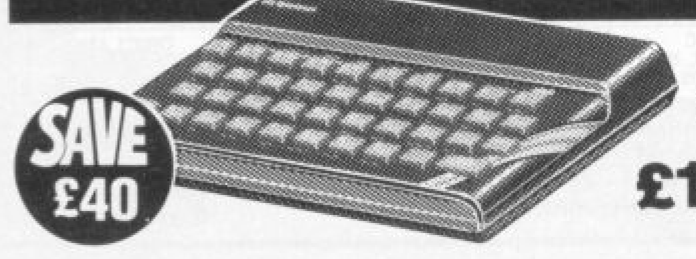
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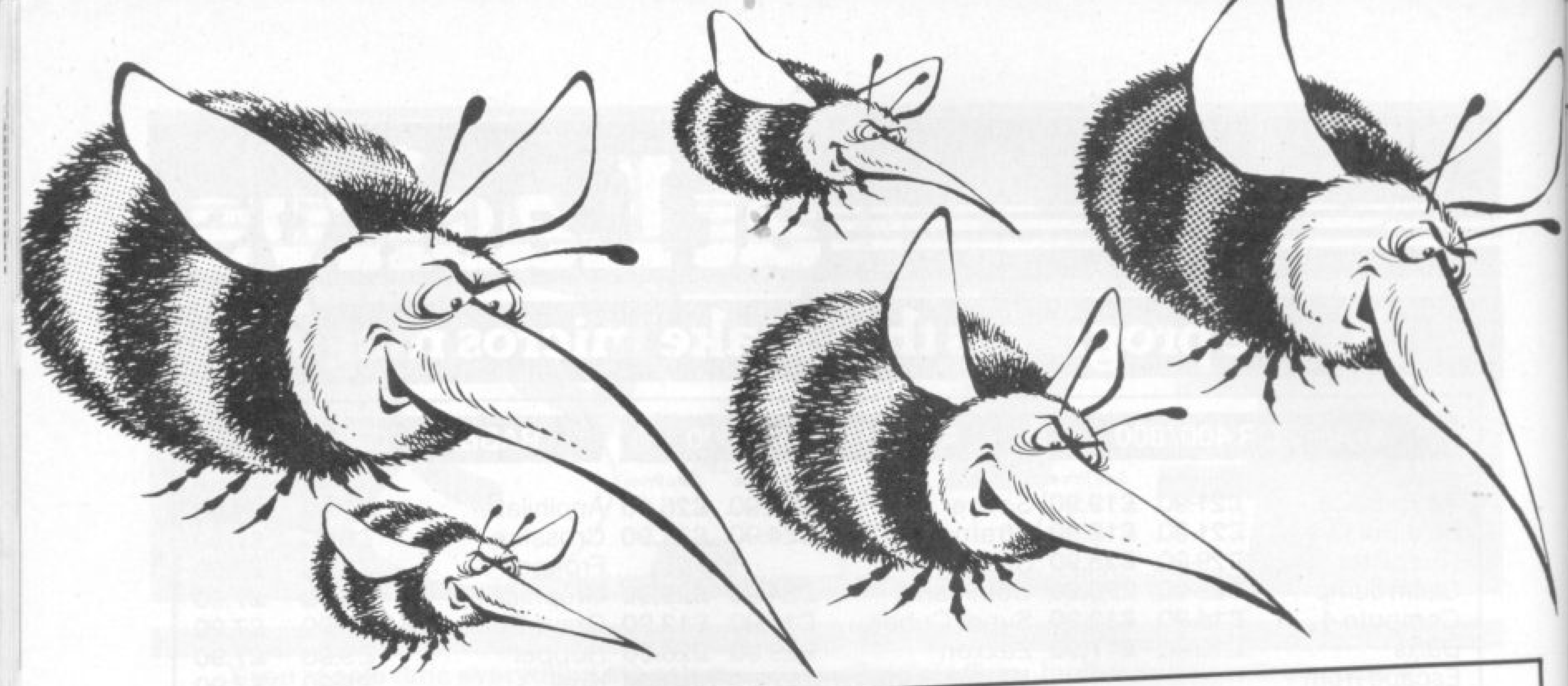
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You'll have to get the point quickly if you want to survive the deadly alien spikes!

The aim of the game is to defend the top layer of a 20 level grid from these nasty spikes which will zap you with electricity should they reach your laser base. The spikes radiate from the centre of the screen and gradually move towards you — rising through the many levels. You move about on the top level ready to blast the spikes using a joystick controller. When you are directly above a spike fire!

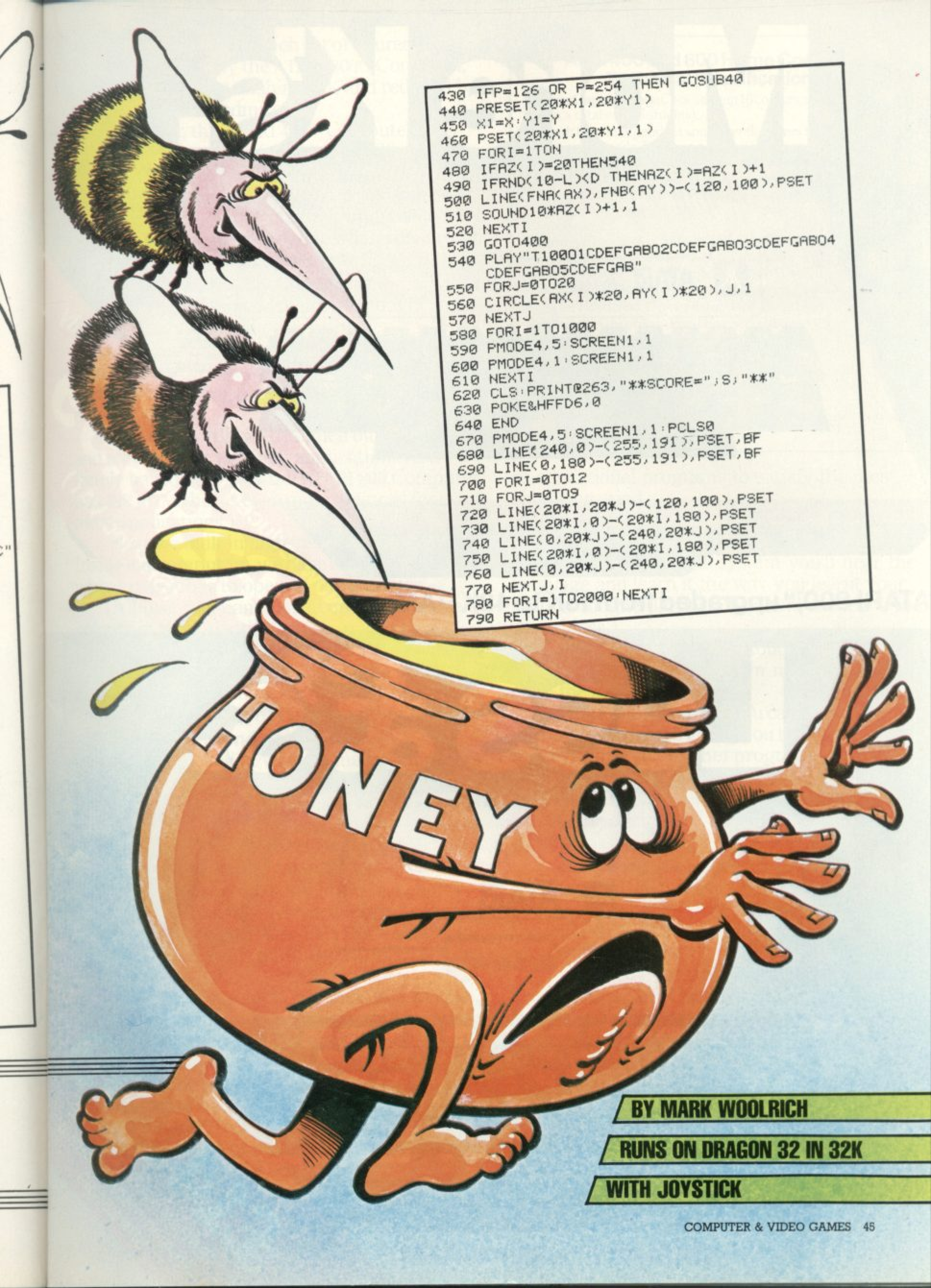
Points are scored for each spike shot — more points are awarded for a rapid destruction of a spike. Once shot they fall back to the centre to start rising up at you once more.

As the game progresses the spikes get faster and more numerous — and are worth more points. Beware — sometimes a spike will rise up in the middle of the screen where you will not be able to see it — so you will have to keep alert. The authors high score is 8240 — can you beat it?

Illustrated by: Terry Rogers

```
10 PCLEAR8
20 POKE&HFFD7,0
30 GOTO220
40 LINE(20*X1,20*Y1)-(120,100),PSET
50 LINE(20*X1,20*Y1)-(120,100),PRESET
60 PLAY"T255O5AGGDDBADCEE"
70 FORI=1TON
80 IFX1=AX(I) AND Y1=AY(I) THEN120
90 NEXTI
110 RETURN
120 PLAY"T200O5BAGFEDCO4BAGFEDCO3BAGFEDCO2BAGFEDCO1BAGFEDC"
130 PMODE4,5:SCREEN1,1
140 S=S+(20-AZ)*(L+D)
150 K=K+1:IFK=5THEN K=0:D=D+1
160 L=L+.2
170 IFRND(8)=1THENN=N+1
180 AX(I)=RND(13)-1:AY(I)=RND(10)-1:AZ(I)=0
190 C$=""
200 PMODE4,1:SCREEN1,1
210 RETURN
220 CLS:PRINT@10,"SPIKE ATTACK"
230 PRINT:PRINT" USE THE RIGHT JOYSTICK TO MOVE"
240 PRINT:PRINT"ABOUT THE TOP LAYER OF THE GRID."
250 PRINT:PRINT"   WHEN DIRECTLY ABOVE A SPIKE"
260 PRINT:PRINT"                FIRE !"
270 PRINT:PRINT:PRINT"PRESS 'Y' TO SHOW GRID AND START"
280 IFINKEY$<>"Y" THEN 280
290 GOSUB670
300 DEF FNA(AX)=(20*AX(I)-120)*AZ(I)/20+120
310 DEF FNB(AY)=(20*AY(I)-100)*AZ(I)/20+100
320 D=2
330 PMODE4,1:SCREEN1,1:PCLS0
340 LINE(241,0)-(255,191),PSET,BF
350 LINE(0,181)-(255,191),PSET,BF
360 FORI=1TO10
370 AX(I)=RND(13)-1:AY(I)=RND(10)-1:AZ(I)=0
380 NEXTI
390 N=1
400 P=PEEK(65280)
410 X=INT(JOYSTK(0)/5.25)
420 Y=INT(JOYSTK(1)/7)
```

SPIKE ATTACK



```
430 IFP=126 OR P=254 THEN GOSUB40
440 PRESET(20*X1,20*Y1)
450 X1=X:Y1=Y
460 PSET(20*X1,20*Y1,1)
470 FORI=1TON
480 IFAZ(I)=20THEN540
490 IFRND(10-L)<D THENAZ(I)=AZ(I)+1
500 LINE(FNA(AX),FNB(AY))-(120,100),PSET
510 SOUND10*AZ(I)+1,1
520 NEXTI
530 GOTO400
540 PLAY"T10001CDEFGABO2CDEFGABO3CDEFGABO4
    CDEFGABO5CDEFGAB"
550 FORJ=0TO20
560 CIRCLE(AX(I)*20,AY(I)*20),J,1
570 NEXTJ
580 FORI=1TO1000
590 PMODE4,5:SCREEN1,1
600 PMODE4,1:SCREEN1,1
610 NEXTI
620 CLS:PRINT@263,"**SCORE=";S;"**"
630 POKE&HFFD6,0
640 END
670 PMODE4,5:SCREEN1,1:PCLS0
680 LINE(240,0)-(255,191),PSET,BF
690 LINE(0,180)-(255,191),PSET,BF
700 FORI=0TO12
710 FORJ=0TO9
720 LINE(20*I,20*J)-(120,100),PSET
730 LINE(20*I,0)-(20*I,180),PSET
740 LINE(0,20*J)-(240,20*J),PSET
750 LINE(20*I,0)-(20*I,180),PSET
760 LINE(0,20*J)-(240,20*J),PSET
770 NEXTJ,I
780 FORI=1TO2000:NEXTI
790 RETURN
```


BY MARK WOOLRICH

RUNS ON DRAGON 32 IN 32K

WITH JOYSTICK

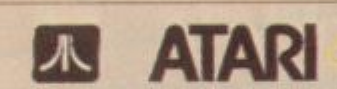
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Before we designed them, we thought about who was actually going to use them.

One day our computers might be playing games; next, they're wrestling with household budgets; teaching geography to an 8-year-old; or printing letters.

In other words, we designed our computers and software for as many applications as a family has ideas. (Now the ATARI 800 Computer has 48K RAM, there's even more memory for even more applications.)

Next we built in high-resolution graphics. Inside our computers, we have a microprocessor whose only job is to operate our graphics.

(All told, you can choose up to 16 different colours in 16 intensities, which gives you a spectrum of 256 different shades.)

In fact, our computers divide the screen up into 60,000 tiny points, each one of which can be changed without affecting the other.

A friend not a fiend.

We also looked at ways to make computers rather friendlier.

On the ATARI 400 Computer, we've incorporated touch-sensitive keys with ridges, so fingers won't slip; on the ATARI 800 Computer, we have keys much as you'd find on a standard typewriter.

You can talk to your computer in a choice of languages (five for the Atari 400, nine for the Atari 800), including ATARI BASIC, using software which you load in on cartridge, cassette, or disk.

For our computers, we have one of the largest software libraries in the world: everything from speech synthesis to sophisticated data management.

No doubt you know all about our famous games such as PAC-MAN†, SPACE INVADERS† and STAR RAIDERS,™ winner of the 1982 Game of the Year Award.

However, we also boast home and office application software as well as educational programs to satisfy the most enquiring mind.

You can learn French, Spanish, German or Italian on our computers and through our unique 'sound through' system you'll hear the language and learn it the way you learnt your mother tongue. (Other computers will leave you speechless.)

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At the same time, the outstanding VisiCalc* program is available for the ATARI 800 Computer.

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As if all that isn't enough, through Atari's Program Exchange (APX), you can have access to a wide range of the most imaginative programs written by our users.

Or you can learn to write your own programs with the help of our 'Invitation to Programming'™ series, using our unique 'sound through' system.

Surprisingly, you won't have to plough through a small library of manuals to do so, since most of the series is on software, not in hard books. Of course, we've always had just about everything you're looking for in computers.

From today, we've got even more.

Atari 400 and 800 Home Computer Technical Specifications.

Colour Capabilities: Choose from 16 colours, and 16 intensities (up to a total of 256 shades).
Sound: Four independent sound synthesisers for musical tones and games sounds. Three and one half octaves. Variable volume and tone for each voice.
Display: Three text modes: 24 lines of 40 characters, double-width characters, or double-height, double-width characters. Nine graphic modes: from 40 columns by 24 rows up to 320 columns by 192 rows.
Memory: Includes a built-in 10K Read Only Memory (ROM) Operating System with 48K Random Access Memory (ATARI 800) and 16K Random Access Memory (ATARI 400).
C.P.U.: 6502B Microprocessor 0.56 micro-second cycle. 1.8Mhz.
Special Features: Three customised integrated circuits.
Extended Graphics Functions: High-resolution graphics. Multi-coloured character set. Software screen switching. Mixed text and graphics modes.
Multiple re-defined character sets. Player missile (sprite) graphics. Fine screen scrolling in any direction. Changeable colour registers. Smooth character movement.
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SQUONK

RUNS ON AN ATARI 400/800 IN 16K NEEDS TWO JOYSTICKS

BY GRAEME HUTCHINSON

IN days of old gladiators fought it out in a vast arena. In the future they will battle it out within the confining walls of a vast maze.

Once one lucky gladiator finds the power pill that is hidden in the maze he will be able to shatter walls with a single blow.

This is a two-player battle set in a maze. The players start off at opposite corners and the all important power pill is in the centre. On touching the pill you can move faster and walk through the red walls which appear randomly throughout the game.

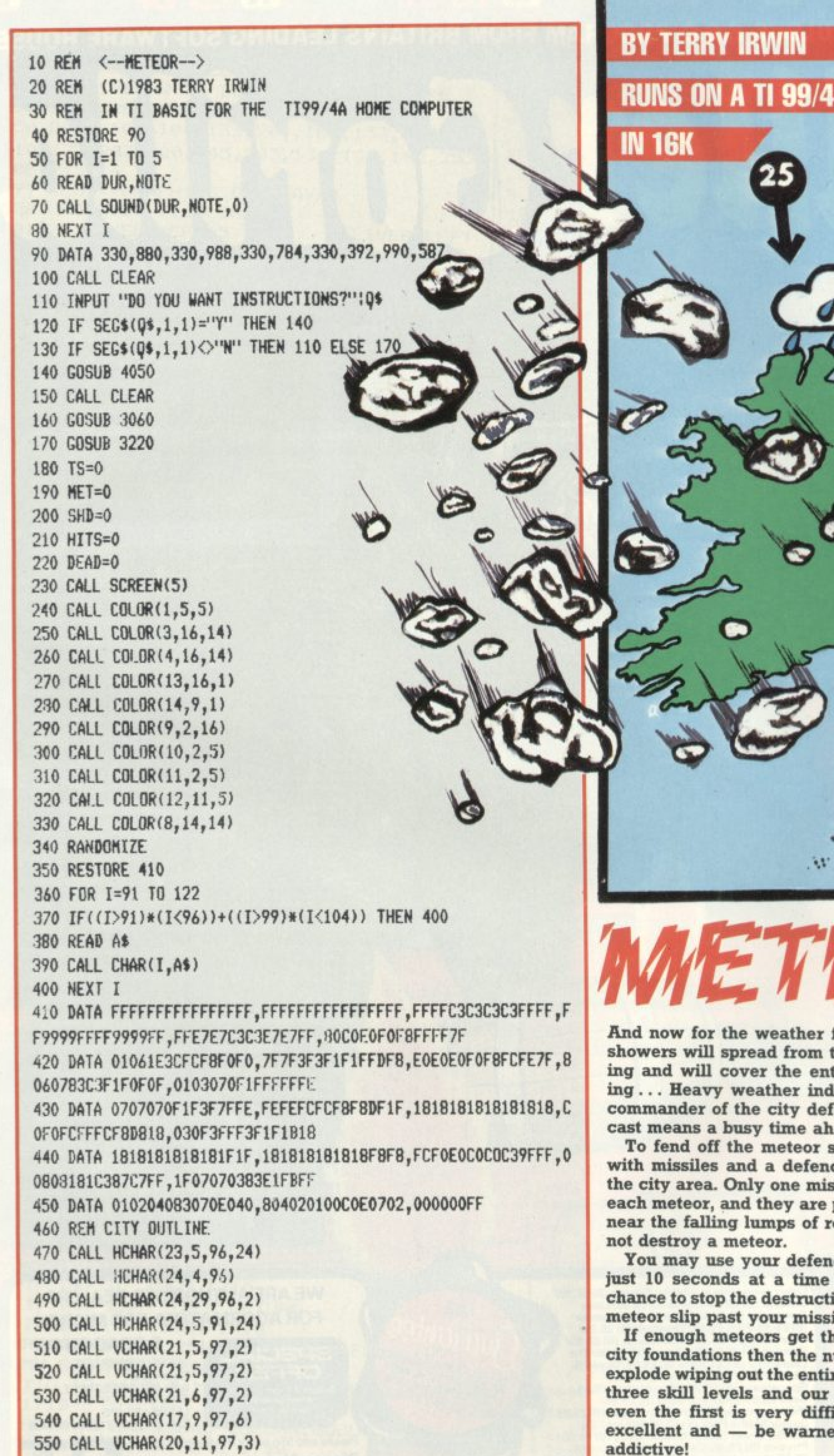
The power pill only has a limited effect however, and after a random period it will be repositioned in the maze. Two pills may appear and either can be used. When a gladiator turns red he can kill his opponent. But he must stay away from the walls of the maze as these carry a deadly charge. When a player has lost all his lives the game is over. Squonk features a starting display which rivals anything we have seen on the Atari – worth entering just for that.

```
5 GOTO 1600
9 REM **PLAYER MOVEMENTS**
10 S=STICK(0):S1=STICK(1)
15 IF S=15 AND S1=15 THEN 19
16 SOUND 1,80,12,12
19 IF S=14 THEN Y=Y-1:B=USR(UP,PMBAS+102
4+Y)
20 IF S1=14 THEN Y1=Y1-1:B=USR(UP,PMBAS+
1280+Y1)
25 IF S=11 THEN X=X-SP1
30 IF S1=11 THEN X1=X1-SP2
35 IF S<>13 THEN 45
40 B=USR(DOWN,PMBAS+1024+Y):Y=Y+1
45 IF S1<>13 THEN 55
50 B=USR(DOWN,PMBAS+1280+Y1):Y1=Y1+1
55 IF S=7 THEN X=X+SP1
60 IF S1=7 THEN X1=X1+SP2
61 POKE HPOSP0,X:POKE HPOSP1,X1:SOUND 1,
0,0,0
62 IF FLAG=1 THEN T=T+1:IF T>500 THEN 80
0
63 W=W+1:IF W>150 THEN GOSUB 75
65 IF PEEK(53252)<>0 THEN 170
66 IF PEEK(53253)<>0 THEN 200
68 IF PEEK(53260)<>0 OR PEEK(53261)<>0 T
HEN 100
72 GOTO 10
75 WY=((INT(RND(0)*8)+1)*8)+4:WX=(INT((R
ND(0)*11)+4)*10)-6
80 COLOR INT(RND(0)*2):PLOT WX,WY-8:DRAW
TO WX,WY+8:PLOT WX-10,WY:DRAWTO WX+10,WY
:W=0:RETURN
99 REM **COLLISION BETWEEN PLAYERS**
100 IF PEEK(53260)=4 THEN 150
101 IF PEEK(53261)=4 THEN 160
108 REM ****PL./PL. DIFF. COLL.****
109 IF PEEK(704)=25 THEN 200
110 IF PEEK(705)=25 THEN 175
111 IF PEEK(53260)=2 THEN C0=C0-1:C1=C1-
1:POKE 657,13:? C0:POKE 656,0:POKE 657,3
5:? C1
112 IF C0=0 OR C1=0 THEN 500:GOSUB 300
120 GOTO 1000
149 REM **CLEAR P3 & CHANGE VARS.**
150 PP1=PP1+1:IF PP1=5 THEN SOUND 1,100,
10,10:C0=C0+1:POKE 656,0:POKE 657,13:? C
0:PP1=0
155 FOR Q=PMBAS+1536 TO PMBAS+1792:POKE
Q,0:NEXT Q:POKE 704,25:SP1=2:POKE 53278,
0:FLAG=1:GOSUB 250:GOTO 10
159 REM **CLEAR P3 & CHANGE VARS.**
160 PP2=PP2+1:IF PP2=5 THEN SOUND 1,100,
10,10:C1=C1+1:POKE 656,0:POKE 657,35:? C
1:PP2=0
165 FOR Q=PMBAS+1536 TO PMBAS+1792:POKE
Q,0:NEXT Q:POKE 705,25:SP2=2:POKE 53278,
0:FLAG=1:GOSUB 250:GOTO 10
170 REM **COLLISION & COUNTER (0)**
171 IF PEEK(704)=25 AND PEEK(53252)=1 TH
EN POKE 53278,0:GOTO 10
175 C0=C0-1:IF C0=0 THEN 500
180 POKE 656,0:POKE 657,13:? C0:GOSUB 30
0
185 GOTO 1000
199 REM **COLLISION & COUNTER (1)**
200 IF PEEK(705)=25 AND PEEK(53253)=1 TH
EN POKE 53278,0:GOTO 10
204 C1=C1-1:IF C1=0 THEN 500
205 GOSUB 300
210 POKE 656,0:POKE 657,35:? C1:GOTO 100
0
250 FOR C=56 TO 156 STEP 5:SOUND 1,C,10,
10:NEXT C:SOUND 1,0,0,0:RETURN
300 FOR C=15 TO 2 STEP -1:FOR Z=0 TO 5:S
OUND 3,250,6,C:NEXT Z:NEXT C:SOUND 3,0,0
,0:RETURN
500 REM **GAME OVER ROUTINE**
501 FOR N=0 TO 160:FOR Z=15 TO 0:SOUND 0
,240,4,Z:POKE 712,PEEK(53770):NEXT Z:NEX
T N:SOUND 0,0,0,0:POKE 712,28
502 IF C0=0 AND C1=0 THEN ? " THE BATTLE
 IS DRAWN              ":GOTO 505
503 IF C0=0 THEN ? " PLAYER 2 IS THE WIN
NER          ":GOTO 505
504 IF C1=0 THEN ? " PLAYER 1 IS THE WIN
NER          "
505 ? "PRESS TRIG TO RESTART"
510 IF STRIG(0)=0 OR STRIG(1)=0 THEN 150
0
515 GOTO 510
800 FLAG=0:T=0:SP1=1:SP2=1:X2=INT(RND(1)
*141)+53:Y2=INT(RND(1)*126)+45:POKE 704,
160:POKE 705,160
810 RESTORE (1074):GOTO 1060
899 REM **P/M INITIALISATION**
900 POKE 712,28:PP1=0:PP2=0:C0=5:C1=5:HP
OSP0=53248:HPOSP1=53249:HPOSP2=53250
1000 I=PEEK(106)-24:POKE 54279,I
1010 PMBAS=I*256
1020 FOR Q=PMBAS+1024 TO PMBAS+1792:POKE
 Q,0:NEXT Q
1030 POKE 656,0:SP1=1:SP2=1:X=52:Y=45:X1
=194:Y1=169:X2=123:Y2=108:POKE 53278,0:R
ESTORE
1040 POKE 704,160:POKE 705,160:POKE 706,
25:POKE HPOSP0,X:POKE HPOSP1,X1
1045 POKE 559,62:POKE 53277,3:FOR Q=0 TO
 8:READ P:POKE PMBAS+1024+Y+Q,P:NEXT Q
1050 FOR Q=0 TO 8:READ P:POKE PMBAS+1280
+Y1+Q,P:NEXT Q
1060 FOR Q=0 TO 8:READ P:POKE PMBAS+1536
+Y2+Q,P
1065 POKE HPOSP2,X2:NEXT Q
1070 DATA 0,30,63,45,30,30,51,33,33
1072 DATA 0,24,60,90,126,60,24,36,66
1074 DATA 0,24,126,66,219,195,94,126,24
1080 POKE 53278,0:GOSUB 1100:GOSUB 1130:
GOTO 10
1100 UP=ADR(UPCODE$)
1110 FOR I=UP TO UP+20:READ B:POKE I,B:N
EXT I:RETURN
1120 DATA 104,104,133,204,104,133,203,16
0,1,177,203,136,145,203,200,200,192,11,2
08,245,96
```

```
1130 DOWN=ADR(DOWNCODE$)
1140 FOR I=DOWN TO DOWN+20:READ B:POKE I
,B:NEXT I:RETURN
1150 DATA 104,104,133,204,104,133,203,16
0,10,177,203,200,145,203,136,136,192,255
,208,245,96
1499 REM **GRAPHICS DISPLAY**
1500 GRAPHICS 7:COLOR 3
1501 ? "LIVES LEFT=5               LIVES LEFT
=5"
1510 RESTORE (1520):FOR Z=1 TO 15:READ A
,B,C,D:PLOT A,B:DRAWTO C,D:NEXT Z
1520 DATA 54,4,54,12,14,36,14,44,54,68,5
4,76,104,68,104,76,34,28,34,44,104,52,12
4,52,54,44,54,60,54,20,54,36,24,44
1521 DATA 24,60,24,20,24,36,104,44,104,6
0,144,36,154,36,134,52,134,60,94,4,94,12
,94,60,94,68
1530 FOR Z=1 TO 24:READ A,B,C,D,E,F:PLOT
 A,B:DRAWTO C,D:DRAWTO E,F:NEXT Z
1540 DATA 34,12,14,12,14,28,84,12,64,12,
64,28,124,12,144,12,144,28,124,28,114,28
,114,36,104,36,104,28,94,28,94,36
1550 DATA 84,36,84,28,44,28,44,52,34,52,
14,52,14,68,34,68,64,52,64,68,84,68,124,
68,144,68,144,52,54,20,54,36,74,36
1560 DATA 94,20,74,20,74,36,94,12,104,12
,104,20,114,12,114,20,134,20,124,36,134,
36,134,20,54,44,74,44,74,60,94,52
1570 DATA 94,60,74,60,44,12,44,20,24,20,
24,60,44,60,44,68,84,52,84,44,104,44,114
,44,144,44,144,36,134,60,114,60
1580 DATA 114,68,4,4,154,4,154,76,4,4,4,
76,154,76
1590 GOTO 900
1600 CLR :POKE 752,1:DIM D$(3),C$(32),UP
CODE$(21),DOWNCODE$(21):TIME=10:POKE 82,
0:GOSUB 1879:GOSUB 1680
1610 C$(15,15)=CHR$(22)
1620 X=USR(ADR(C$),TIME)
1630 GRAPHICS 7+32:POKE 752,1:SETCOLOR 2
,0,0
1640 ? "  A GAME FOR THE ATARI 400/800".
1642 ? "            by"
1644 ? "   GRAEME HUTCHESON          (PRESS
 TRIG)"
1650 FOR I=1 TO 750:IF STRIG(0)=0 OR STR
IG(1)=0 THEN 2000
1660 NEXT I:POKE 77,254:GOTO 1600
1670 REM
1680 GRAPHICS 23:SETCOLOR 0,0,0:SETCOLOR
 1,0,14:SETCOLOR 2,0,0:SETCOLOR 4,0,0
1690 COLOR 2:FCOLOR=1
1700 RESTORE (1820)
1710 READ D$:IF ASC(D$)<64 THEN 1800
1720 IF D$="P" THEN READ ROW,COLUMN:GOSU
B 1810:PLOT COLUMN,ROW:GOTO 1710
1730 IF D$="R" THEN READ RORIGIN,CORIGIN
:GOTO 1710
1740 IF D$="S" THEN READ VOICE,PITCH:SOU
ND VOICE,PITCH,10,6:GOTO 1710
1750 IF D$="D" THEN 1710
1760 IF D$="END" THEN RETURN
1770 IF D$<>"F" THEN 1710
1780 READ ROW,COLUMN:GOSUB 1810:POSITION
 COLUMN,ROW:POKE 765,FCOLOR
1790 XIO 18,#6,0,0,"S:":PLOT COLUMN,ROW:
GOTO 1710
1800 ROW=VAL(D$):READ COLUMN:GOSUB 1810:
DRAWTO COLUMN,ROW:GOTO 1710
1810 ROW=ROW+RORIGIN:COLUMN=COLUMN+CORIG
IN:RETURN
```

```
1820 DATA R,15,5,S,3,205
1821 DATA P,2,7,2,13,4,16,6,18,8,19,8,13
,F,6,11,6,9,8,7,10,9,10,13,12,16,14,18,1
6,19
1822 DATA 19,19,21,18,23,16,25,13,25,7,P
,17,7,19,9,F,19,11,F,17,13,F,15,11,F,15,
9
1823 DATA P,25,13,F,25,7,F,23,4,F,21,2,F
,19,1,F,17,1,17,7,P,15,9,F,14,7,F,12,4,F
,10,2,F,8,1,F,6,2,F,4,4,F,2,7
1830 DATA R,25,28,S,2,180
1831 DATA P,2,7,2,13,4,16,6,18,8,19,19,1
9,21,18,23,16,P,8,7,6,9,F,6,11,F,8,13,F,
19,13,F,21,11,21,9,19,7,8,7
1832 DATA P,23,16,27,19,29,16,F,25,13,F,
25,7,F,23,4,F,21,2,F,19,1,F,8,1,F,6,2,F,
4,4,F,2,7
1840 DATA R,15,50,S,1,155
1841 DATA P,2,13,2,19,19,19,21,18,23,16,
25,13,25,7
1842 DATA P,2,19,2,13,19,13,F,21,11,21,9
,19,7,2,7,2,1,P,25,7,F,23,4,F,21,2,F,19,
1,F,2,1
1843 DATA P,20,13,F,2,13
1850 DATA R,25,72,S,0,120
1851 DATA P,2,7,2,13,4,16,6,18,8,19,19,1
9,21,18,23,16,25,13,P,8,7,6,9,F,6,11,F,8
,13,F,19,13,F,21,11,21,9,19,7,8,7
1852 DATA P,25,13,25,7,F,23,4,F,21,2,F,1
9,1,F,8,1,F,6,2,F,4,4,F,2,7
1860 DATA R,15,94,S,3,95
1861 DATA P,2,1,2,7,8,13,2,13,2,19,25,19
,25,13,F,19,13,F,13,7,25,7,F,25,1,F,2,1,
2,7,9,13,F,2,13
1870 DATA R,25,116,S,2,70
1871 DATA P,2,1,2,7,11,7,P,19,19,13,14,8
,19,2,19,2,13,F,8,13,F,11,7,P,19,19,25,1
9,25,13,F,19,13,F,16,7,25,7
1872 DATA 25,1,F,2,1
1879 DATA END
1880 RESTORE (1910)
1890 FOR I=1 TO 32:READ C:C$(I)=CHR$(C):
NEXT I
1900 RETURN
1910 DATA 104,104,104,72,162,57,160,0,17
3,0,210,101,20,141,22,208,141,10,212,136
,208,242,202,208,237,104
1911 DATA 56,233,1,208,228,96
2000 FOR N=0 TO 3:SOUND N,0,0,0:NEXT N:G
RAPHICS 0:POKE 82,2:POKE 710,210:? "}":?
 :? "             SQUONK"
2010 ? :? "  SQUONK is a two player batt
le game  set in a maze.The players are s
ited   at opposite corners and ";
2015 ? "the Power Pillin the centre.On t
ouching the Pill youmove faster and can
walk through RED  walls,which";
2020 ? " appear randomly throughoutthe g
ame.Touch 5 Pills and you gain a life.Wh
en coloured red you can kill"
2025 ? "your opponent by touching him.If
 you  touch any wall you also lose a lif
e."
2030 ? "The Power Pill only has a limite
d     effect and after a certain time it
 is repositioned in the maze.";
2040 ? "Two Power     Pills may appear an
d either can be    used.When a player ha
s lost all his   lives the game";
2050 ? " is over."
2060 ? :? :? "PRESS TRIG. TO START":GOTO
 510
```


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```
10 REM  <--METEOR-->
20 REM  (C)1983 TERRY IRWIN
30 REM  IN TI BASIC FOR THE  TI99/4A HOME COMPUTER
40 RESTORE 90
50 FOR I=1 TO 5
60 READ DUR,NOTE
70 CALL SOUND(DUR,NOTE,0)
80 NEXT I
90 DATA 330,880,330,988,330,784,330,392,990,587
100 CALL CLEAR
110 INPUT "DO YOU WANT INSTRUCTIONS?":Q$
120 IF SEG$(Q$,1,1)="Y" THEN 140
130 IF SEG$(Q$,1,1)<>"N" THEN 110 ELSE 170
140 GOSUB 4050
150 CALL CLEAR
160 GOSUB 3060
170 GOSUB 3220
180 TS=0
190 MET=0
200 SHD=0
210 HITS=0
220 DEAD=0
230 CALL SCREEN(5)
240 CALL COLOR(1,5,5)
250 CALL COLOR(3,16,14)
260 CALL COLOR(4,16,14)
270 CALL COLOR(13,16,1)
280 CALL COLOR(14,9,1)
290 CALL COLOR(9,2,16)
300 CALL COLOR(10,2,5)
310 CALL COLOR(11,2,5)
320 CALL COLOR(12,11,5)
330 CALL COLOR(8,14,14)
340 RANDOMIZE
350 RESTORE 410
360 FOR I=91 TO 122
370 IF((I>91)*(I<96))+((I>99)*(I<104)) THEN 400
380 READ A$
390 CALL CHAR(I,A$)
400 NEXT I
410 DATA FFFFFFFFFFFFFFFF,FFFFFFFFFFFFFFFF,FFFFC3C3C3C3FFFF,F
F9999FFFF9999FF,FFE7E7C3C3E7E7FF,80C0E0F0F8FFFF7F
420 DATA 01061E3CFCF8F0F0,7F7F3F3F1F1FFDF8,E0E0E0F0F8FCFE7F,8
060783C3F1F0F0F,0103070F1FFFFFFE
430 DATA 0707070F1F3F7FFE,FEFEFCFCF8F8DF1F,1818181818181818,C
0F0FCFFFCF8D818,030F3FFF3F1F1818
440 DATA 181818181818181F1F,1818181818181F8F8,FCF0E0C0C0C39FFF,0
0808181C387C7FF,1F07070383E1FBFF
450 DATA 010204083070E040,804020100C0E0702,000000FF
460 REM CITY OUTLINE
470 CALL HCHAR(23,5,96,24)
480 CALL HCHAR(24,4,96)
490 CALL HCHAR(24,29,96,2)
500 CALL HCHAR(24,5,91,24)
510 CALL VCHAR(21,5,97,2)
520 CALL VCHAR(21,5,97,2)
530 CALL VCHAR(21,6,97,2)
540 CALL VCHAR(17,9,97,6)
550 CALL VCHAR(20,11,97,3)
560 CALL VCHAR(20,12,97,3)
570 CALL VCHAR(20,13,97,3)
```

METEOR

And now for the weather forecast. Heavy meteor showers will spread from the West towards evening and will cover the entire city area by morning . . . Heavy weather indeeed! And for you, the commander of the city defence systems this forecast means a busy time ahead.

To fend off the meteor showers you are armed with missiles and a defence shield which covers the city area. Only one missile can be launched at each meteor, and they are programmed to explode near the falling lumps of rock — a direct hit may not destroy a meteor.

You may use your defence shield for periods of just 10 seconds at a time — which gives you a chance to stop the destruction of your city should a meteor slip past your missiles.

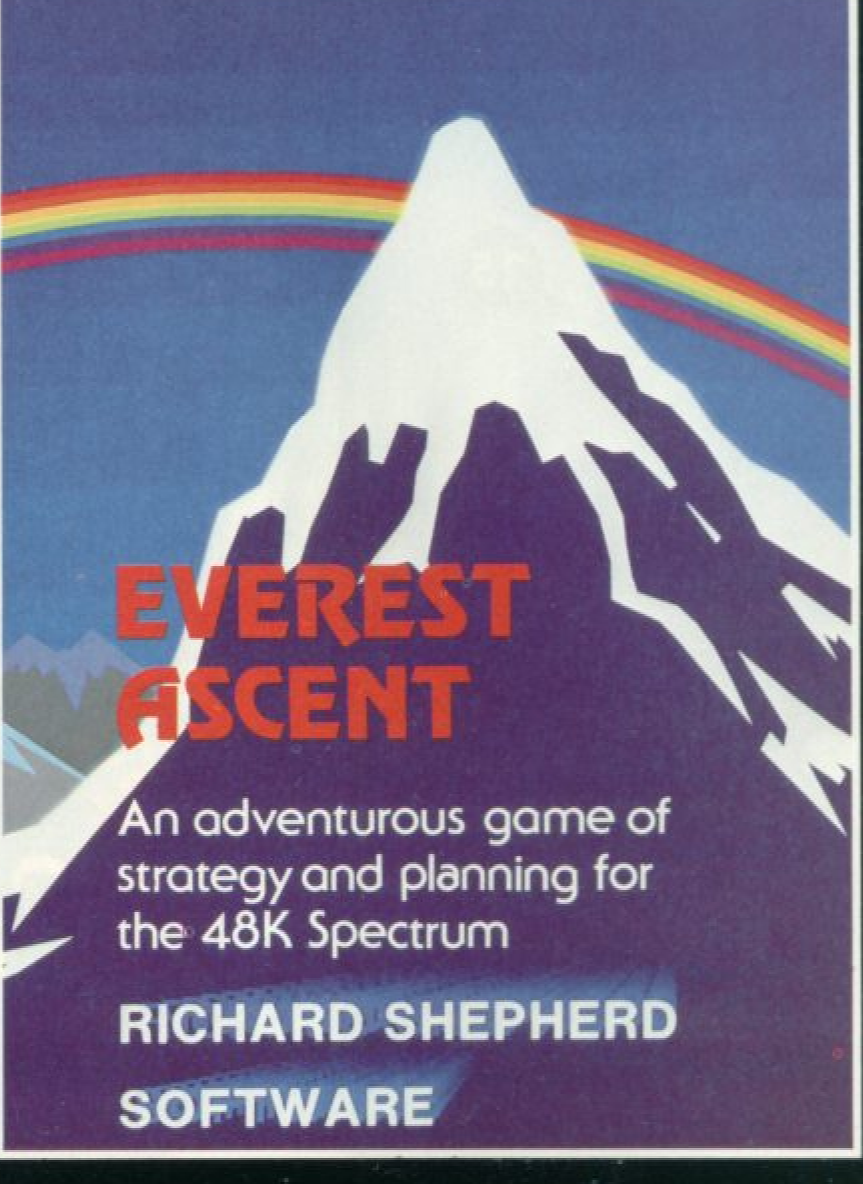
If enough meteors get through to penetrate the city foundations then the nuclear power plant will explode wiping out the entire population. There are three skill levels and our review team said that even the first is very difficult. The graphics are excellent and — be warned — the game is very addictive!

```
580 CALL VCHAR(20,14,97,3)
590 CALL VCHAR(20,15,97,3)
600 CALL VCHAR(15,18,97,8)
610 CALL VCHAR(15,19,97,8)
620 CALL VCHAR(18,21,97,5)
630 CALL VCHAR(22,22,97)
640 CALL VCHAR(22,23,97)
650 CALL VCHAR(18,24,97,5)
660 CALL VCHAR(18,25,97,5)
670 CALL VCHAR(16,27,97,7)
680 CALL VCHAR(16,28,97,7)
690 CALL VCHAR(14,6,98,7)
700 CALL VCHAR(14,7,98,9)
710 CALL VCHAR(14,8,98,9)
720 CALL VCHAR(14,9,98,3)
730 CALL VCHAR(15,11,98,5)
740 CALL VCHAR(15,12,98,5)
750 CALL VCHAR(16,15,98,4)
760 CALL VCHAR(16,16,98,7)
770 CALL VCHAR(14,23,98,8)
780 CALL VCHAR(14,24,98,4)
790 CALL VCHAR(14,25,98,4)
800 CALL VCHAR(14,26,98,9)
810 CALL VCHAR(14,27,98,2)
820 REM LASERS
830 CALL VCHAR(17,3,112,3)
840 CALL VCHAR(17,31,112,3)
850 CALL VCHAR(20,3,99,5)
860 CALL VCHAR(20, 31,99,5)
870 CALL VCHAR(12,2,112,4)
880 CALL VCHAR(12,32,112,4)
890 CALL VCHAR(16,2,115)
900 CALL VCHAR(16,32,116)
910 CALL VCHAR(11,2,113)
920 CALL VCHAR(11,32,114)
930 CALL VCHAR(15,3,104)
940 CALL VCHAR(15,4,105)
950 CALL VCHAR(16,3,106)
960 CALL VCHAR(16,4,107)
970 CALL VCHAR(15,30,108)
980 CALL VCHAR(15,31,109)
990 CALL VCHAR(16,30,110)
1000 CALL VCHAR(16,31,111)
1010 REM METEOR
1020 CALL CHAR
(130,"00483410BE964122")
1030 CALL CHAR(133,"00003030")
1040 CALL CHAR(134,"00000C0C")
1050 CALL CHAR(137,"000000003030")
1060 CALL CHAR(138,"000000000C0C")
1070 CALL HCHAR(24,6,48,4)
1080 CALL HCHAR(24,25,48,3)
1090 M=0
1100 FOR X=28 TO 5 STEP -1
1110 CALL SOUND
(-500,250,30,500,30,1000,30,-8,X+2)
1120 FOR T=134 TO 137 STEP 3
1130 CALL VCHAR(29-X,X,T)
1140 NEXT T
1150 MY=29-X
1160 CALL KEY(0,K,S)
1170 CODE=1
1180 IF S=0 THEN 1210
1190 IF K=48 THEN 1200 ELSE 1210
1200 GOTO 2680
1210 CALL VCHAR(29-X,X,32)
1220 CALL GCHAR(30-X,X-1,D)
1230 IF D<96 THEN 1460
1240 IF D>98 THEN 1440
1250 DEAD=DEAD+100
1260 GOSUB 4200
1270 IF D=97 THEN 1310
1280 CALL VCHAR(30-X,X-1,130)
1290 CALL VCHAR(30-X,X-1,117)
1300 GOTO 1370
1310 Y=30-X
1320 Z=X-1
1330 IF ((Z=9)*((Y<23)*(Y>16)))
THEN 1350
1340 GOTO 1290
1350 CALL VCHAR(Y,Z,130)
1360 CALL VCHAR(Y,Z,98)
1370 CALL SOUND(-800,-7,0)
1380 FOR DELAY=1 TO 200
1390 NEXT DELAY
1400 IF (30-X)=23 THEN 3640
1410 MET=MET+1
1420 IF MET>=METEOR THEN 3420
1430 GOTO 1470
1440 CALL SOUND(-300,-7,0)
1450 CALL VCHAR(30-X,X-1,130)
1460 NEXT X
1470 FOR F=1 TO 10*RND
1480 M=0
1490 SHD=0
1500 MET=MET+1
1510 IF MET>=METEOR THEN 3420
1520 X=INT(28*RND)
1530 IF X<5 THEN 1520
1540 FOR Y=1 TO 24
1550 CALL SOUND
(-500,250,30,500,30,1000,30,-8,27-Y)
1560 FOR T=133 TO 137 STEP 4
1570 CALL VCHAR(Y,X,T)
1580 NEXT T
1590 IF (SHD>0)*(SHD<5) THEN 2970
1600 MY=Y
```



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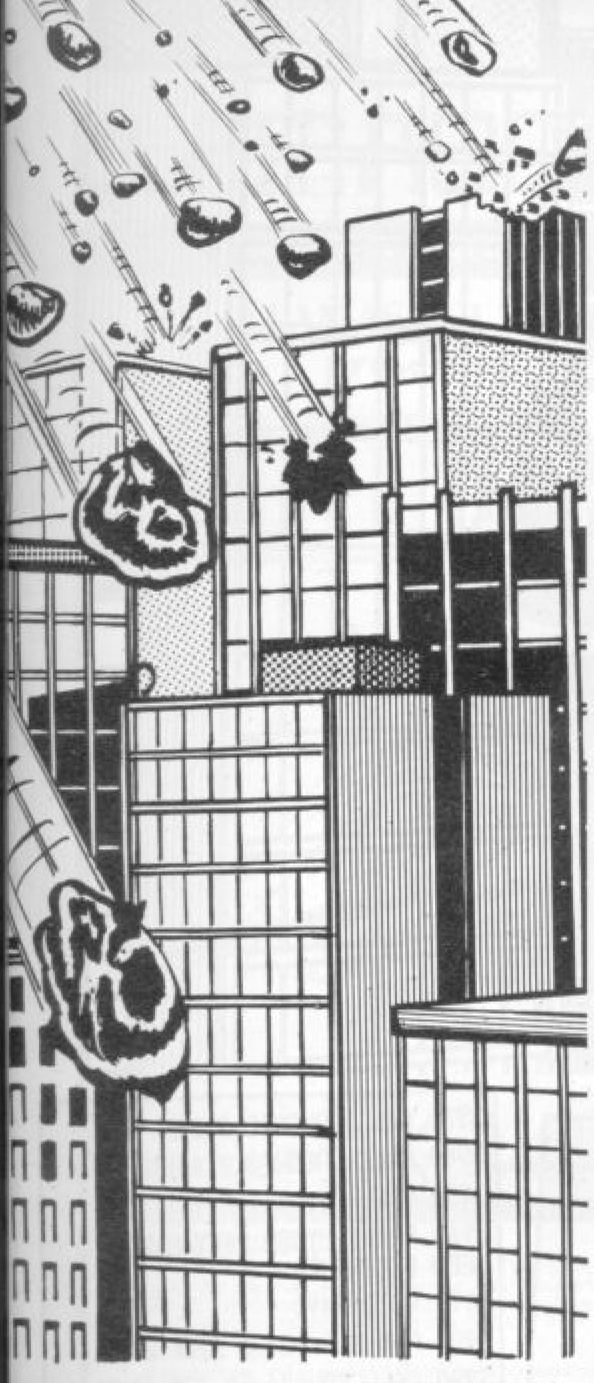
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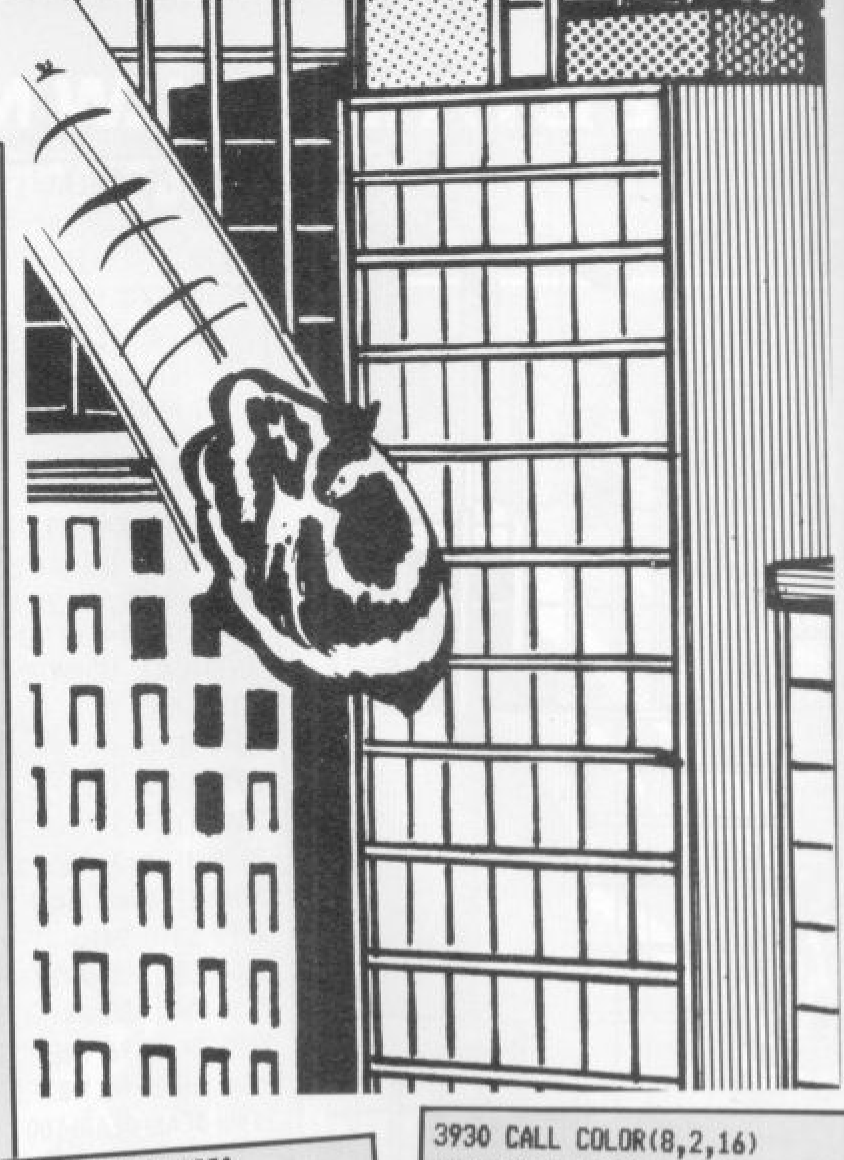
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```
1610 CALL KEY(0,K,S)
1620 CODE=2
1630 IF S=0 THEN 1710
1640 IF K=48 THEN 1650 ELSE 1660
1650 GOTO 2680
1660 IF K=49 THEN 1670 ELSE 1680
1670 GOTO 2410
1680 IF K=50 THEN 1690 ELSE 1710
1690 TS=TS+1
1700 GOTO 2970
1710 CALL VCHAR(Y,X,32)
1720 CALL GCHAR(Y+1,X,D)
1730 IF D<96 THEN 1960
1740 IF D=122 THEN 1810
1750 IF D>116 THEN 1940
1760 DEAD=DEAD+300
1770 GOSUB 4200
1780 GOSUB 4200
1790 GOSUB 4200
1800 GOTO 1840
1810 CALL VCHAR(Y+1,X,130)
1820 CALL VCHAR(Y+1,X,32)
1830 GOTO 1870
1840 CALL VCHAR(Y+1,X,130,2)
1850 CALL VCHAR(Y+1,X,32)
1860 CALL VCHAR(Y+2,X,118)
1870 CALL HCHAR(11,3,32,29)
1880 SHD=0
1890 CALL SOUND(-800,-7,0)
1900 FOR DELAY=1 TO 200
1910 NEXT DELAY
1920 IF (Y+1)>=22 THEN 3640
1930 GOTO 1970
1940 CALL SOUND(-300,-7,0)
1950 CALL VCHAR(Y+1,X,130)
1960 NEXT Y
1970 NEXT F
1980 M=0
1990 FOR X=5 TO 28
2000 CALL SOUND(-500,250,30,500,
30,1000,30,-8,31-X)
2010 FOR T=133 TO 138 STEP 5
2020 CALL VCHAR(X-4,X,T)
2030 NEXT T
2040 MY=X-4
2050 CALL KEY(0,K,S)
2060 CODE=3
2070 IF S=0 THEN 2100
2080 IF K=49 THEN 2090 ELSE 2100
2090 GOTO 2410
2100 CALL VCHAR(X-4,X,32)
2110 CALL GCHAR(X-3,X+1,D)
2120 IF D<96 THEN 2330
2130 IF D>98 THEN 2310
2140 DEAD=DEAD+100
2150 GOSUB 4200
2160 IF D=97 THEN 2180
2170 GOTO 2210
2180 Y=X-3
2190 Z=X+1
2200 IF ((Z=23)*(Y=22))+(((Z=24)
+(Z=25))*((Y<23)*(Y>17))) THEN 2240
2210 CALL VCHAR(X-3,X+1,130)
2220 CALL VCHAR(X-3,X+1,119)
2230 GOTO 2260
2240 CALL VCHAR(Y,Z,130)
2250 CALL VCHAR(Y,Z,98)
2260 CALL SOUND(-800,-7,0)
2270 FOR DELAY=1 TO 200
2280 NEXT DELAY
2290 IF (X-3)=23 THEN 3640
2300 GOTO 2340
2310 CALL SOUND(-300,-7,0)
2320 CALL VCHAR(X-3,X+1,130)
2330 NEXT X
2340 C=10*RND
2350 M=0
2360 MET=MET+1
2370 IF MET>=METEOR THEN 3420
2380 IF C<1 THEN 1100
2390 IF C<6 THEN 1470
2400 IF C<=10 THEN 1990
2410 IF M=1 THEN 2420 ELSE 2430
2420 ON CODE GOTO 1210,1710,2100
2430 FOR L=1 TO 13 STEP 2
2440 CALL SOUND(-1000,10000,
L,5000,5+L,-6,5+L)
2450 CALL VCHAR(15-L,4+L,120)
2460 CALL GCHAR(14-L,5+L,Q)
2470 CALL GCHAR(14-L,4+L,R)
2480 CALL VCHAR(15-L,4+L,32)
2490 IF Q>127 THEN 2590
2500 IF R>127 THEN 2590
2510 IF (15-L)<MY THEN 2520
ELSE 2540
2520 TEST=1
2530 GOTO 2590
2540 IF L=13 THEN 2590
2550 NEXT L
2560 M=M+1
2570 TEST=0
2580 ON CODE GOTO 1210,1710,2100
2590 CALL SOUND(-500,-6,0)
2600 CALL HCHAR(14-L,4+L,130,2)
2610 CALL HCHAR(14-L,4+L,32,2)
2620 IF TEST=1 THEN 2560
2630 IF L=13 THEN 2560
2640 M=0
2650 HITS=HITS+1
2660 GOSUB 4090
2670 ON CODE GOTO 1470,1970,2340
2680 IF M=1 THEN 2690 ELSE 2700
2690 ON CODE GOTO 1210,1710,2100
2700 FOR L=13 TO 1 STEP-2
2710 CALL SOUND(-1000,10000,13-L,
5000,18-L,-6,18-L)
2720 CALL VCHAR(1+L,16+L,121)
2730 CALL GCHAR(L,15+L,Q)
2740 CALL GCHAR(L,16+L,R)
2750 CALL VCHAR(1+L,16+L,32)
2760 IF Q>127 THEN 2860
2770 IF R>127 THEN 2860
2780 IF (1+L)<MY THEN 2790 ELSE 2810
2790 TEST=1
2800 GOTO 2860
2810 IF L=1 THEN 2860
2820 NEXT L
2830 M=M+1
2840 TEST=0
2850 ON CODE GOTO 1210,1710,2100
2860 CALL SOUND(-500,-6,0)
2870 CALL HCHAR(L,15+L,130,2)
2880 CALL HCHAR(L,15+L,32,2)
2890 IF TEST=1 THEN 2830
2900 IF L=1 THEN 2830
2910 HITS=HITS+1
2920 GOSUB 4090
2930 M=0
2940 MET=MET+1
2950 IF MET>=METEOR THEN 3420
2960 ON CODE GOTO 1470,1970,2340
2970 IF (TS=10)*(SHD=0) THEN
2980 ELSE 2990
2980 CALL SOUND(-500,1000,0)
2990 IF TS>=11 THEN 1710
3000 CALL HCHAR(11,3,122,29)
3010 SHD=SHD+1
3020 IF SHD<4 THEN 1710
3030 CALL HCHAR(11,3,32,29)
3040 SHD=0
3050 GOTO 1710
```



```
3060 PRINT "  SITUATION--- YOU ARE IN   CONTROL OF YOU
R CITY       DEFENCE SYSTEMS."
3070 PRINT "  MISSION----- TO DEFEND    AGAINST A METE
OR STORM."
3080 PRINT "  CONTROLS-- PRESS '1' FOR  LEFT SILO!PRES
S'0' FOR   RIGHT SILO!PRESS '2' FOR     SHIELD."
3090 FOR DELAY=1 TO 3000
3100 NEXT DELAY
3110 GOSUB 4050
3120 PRINT "  EQUIPMENT----                 1. 2-LASER CON
TROLLED    NUCLEAR MISSILE SILOS        (KEYS 0&1)."
3130 PRINT "2. MAGNETIC SHIELD ABOVE   CITY (KEY 2)."
3140 GOSUB 4050
3150 PRINT "  LIMITATIONS--                1. ONLY 1 MISS
ILE CAN BE    LAUNCHED AT EACH METEOR."
3160 PRINT "2. THE SHIELD CAN BE USED   (IF AVAILABLE)
 FOR 10,3SEC. BURSTS(MAX)."
3170 PRINT "3. A DIRECT HIT ON A METEOR MAY NOT ALWAYS
DISTROY IT--  MISSILES ARE SET TO EXPLODE."
3180 PRINT "NEAR THE METEOR FOR MAXIMUM DESTRUCTIVE PO
WER."
3190 PRINT "4. IF THE CITY FOUNDATIONS  ARE PENETRATED
THEN ITS       NUCLEAR POWER PLANT WILL     EXPLODE."
3200 RETURN
3210 GOSUB 4050
3220 PRINT "SELECT LEVEL 1,2 OR 3           1-LIGHT STORM!
!!2-MODERATE  STORM!!!3-HEAVY STORM."
3230 GOSUB 4050
3240 CALL KEY(0,K,S)
3250 IF S=0 THEN 3310
3260 IF K=49 THEN 3350
3270 IF K=50 THEN 3370
3280 IF K=51 THEN 3390
3290 IF K<49 THEN 3240
3300 IF K>51 THEN 3240
3310 FOR S=0 TO 30 STEP 2
3320 CALL SOUND(10,110*(S+1),S)
3330 NEXT S
3340 GOTO 3240
3350 METEOR=50
3360 GOTO 3400
3370 METEOR=100
3380 GOTO 3400
3390 METEOR=150
3400 CALL CLEAR
3410 RETURN
3420 PRINT "THE CITY IS SAFE-GOOD WORK!"
3430 CALL COLOR(8,2,1)
3440 CALL COLOR(3,2,1)
3450 CALL COLOR(4,2,1)
3460 PRINT
3470 PRINT "PEOPLE KILLED!!";DEAD
3480 PRINT
3490 PRINT "METEORS INTERCEPTED!!";HITS
3500 PRINT
3510 PRINT "PERCENTAGE HIT!!";HITS*100/METEOR;"%"
3520 PRINT
3530 PRINT "PRESS 'S' TO START                PRESS 'T' TO
TERMINATE"
3540 CALL KEY(0,K,S)
3550 IF S=0 THEN 3600
3560 IF K=83 THEN 40
3570 IF K=84 THEN 3980
3580 IF K<83 THEN 3540
3590 IF K>84 THEN 3540
3600 FOR S=0 TO 30 STEP 2
3610 CALL SOUND(10,110*(S+1),S)
3620 NEXT S
3630 GOTO 3540
3640 FOR R=1 TO 10
3650 CALL SOUND(100,200,0,-1,10)
3660 CALL SOUND(100,400,0,-1,10)
3670 NEXT R
3680 CALL SOUND(4000,-7,0)
3690 CALL SCREEN(5)
3700 CALL COLOR(9,2,2)
3710 FOR DELAY=1 TO 90
3720 NEXT DELAY
3730 FOR X=7 TO 10
3740 IF X=8 THEN 3800
3750 CALL COLOR(9,X,X)
3760 CALL COLOR(11,X,X)
3770 CALL COLOR(10,X,X)
3780 FOR DELAY=1 TO 90
3790 NEXT DELAY
3800 NEXT X
3810 CALL COLOR(8,16,16)
3820 CALL COLOR(9,16,16)
3830 CALL COLOR(11,16,16)
3840 CALL COLOR(10,16,16)
3850 FOR DELAY=1 TO 90
3860 NEXT DELAY
3870 CALL SCREEN(16)
3880 CALL COLOR(1,16,16)
3890 FOR T=0 TO 30 STEP 2
3900 CALL SOUND(-500,-7,T)
3910 NEXT T
3920 CALL CLEAR
3930 CALL COLOR(8,2,16)
3940 CALL COLOR(3,2,16)
3950 CALL COLOR(4,2,16)
3960 PRINT "YOUR CITY HAS
BEEN DESTROYED"
3970 GOTO 3490
3980 FOR S=0 TO 30 STEP 2
3990 CALL SOUND(-50,230-(4*S),
30-S,2300-(40*S),S)
4000 NEXT S
4010 FOR S=0 TO 30 STEP 5
4020 CALL SOUND(200,110,S)
4030 NEXT S
4040 END
4050 FOR A=0 TO 30 STEP 5
4060 CALL SOUND(-99,698,A,1924,A)
4070 NEXT A
4080 RETURN
4090 CALL GCHAR(24,27,S)
4100 IF S=57 THEN 4130
4110 CALL HCHAR(24,27,S+1)
4120 RETURN
4130 CALL GCHAR(24,26,S)
4140 CALL HCHAR(24,27,48)
4150 CALL HCHAR(24,26,S+1)
4160 IF S=57 THEN 4180
4170 RETURN
4150 CALL HCHAR(24,25,49)
4190 RETURN
4200 CALL GCHAR(24,7,DD)
4210 IF DD=57 THEN 4240
4220 CALL HCHAR(24,7,DD+1)
4230 RETURN
4240 CALL GCHAR(24,6,DD)
4250 CALL HCHAR(24,7,48)
4260 CALL HCHAR(24,6,DD+1)
4270 RETURN
```

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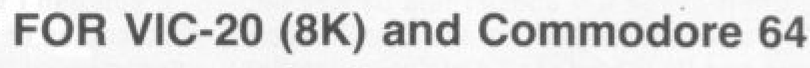
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MATRIX

GRIDRUNNER 2



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ROX-64 K
Rox is a challenging game involving the defence of your lunar base from a deadly meteor shower. Rox-64 includes amazing sprite graphics displays and spacy sound effects, and an awesome 'mothership' display if you win the game. Top 10 scores are tabled along with their names. This program shows just what can be achieved using only Commodore-64 basic. Study the listing and learn how to use sprites and sound on this outstanding machine. **£4.95 + 50p P&P.**

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BOMBER (16K) K
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Colourful new game starring Chico the headbanger who you must guide to riches through an increasing shower of heavy metal. Gain bonuses for headbanging but be sure to take an asprin when the pain gets too much! Basic + m/c to speed up action. Great graphics, nice animation. Will even drive William Stuart system's voice synthesiser to produce speech output. Can you attain the grade of 'Rocker Class One' or will you be 'Barry Manilow Class 5'? Start headbanging to-day and find out. **£4.95.**

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Bounce 'Sid', the space invader, around the screen into the power pods, keeping away of course from the devil who chases you around the screen. Steer with your Deflex shields, but beware the mines or you may be buried alive! Superb graphics and fantastic sound on the 48K Spectrum only. **Only £4.95 on cassette + 50p P&P.**

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ZX81

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The ORIGINAL game from the ORIGINAL author. This is the identical program to that being sold by other companies for three times our price. The game has received ecstatic reviews in the computing press. Program has 30 speed levels and ever increasing Centipede hordes. Tables top 10 scores and names. Why wait to pay more? **Only £1.95 + 50p P&P.**

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We would prefer a tape and listing but can work from just a tape and will return it to you if it doesn't find its way into the magazine. We will also need an additional sheet explaining the game and its theme. And any documentation like lists of variables or how certain routines are working, would be of great help to beginners. Please make sure that your name, address and the program name is on everything you send us, including the cassette itself.

This form will merely help us to keep a check on your game as it goes through our testing process and make sure we have all the information we need to present it properly in the magazine.

If you don't want to cut up the magazine, we will accept photocopies or close copies of this page. This form will be appearing regularly in C&VG issues from now on.

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Program name: ....

Machine make: .... Model ....

Other models it should run on: .... Number of K needed to run it: ....

Other equipment (joysticks, Extended Basic, add ons, etc.) needed to run it: ....

Author's Christian name: .... Surname: ....

Address: ....

....

.... Tel: .... Date:

Type of game: (If original please say so) ....

Loading instructions: ....

Game instructions: (If not included in the listing) ....

....

....

Office use only

Date received: ....

Acknowledgement sent: ☐

Name of evaluator: ....

Date sent out: ....

Date due back: ....

Needs to be returned to author for alterations: ☐ Date sent: ....

Due to be published in issue of magazine. ....

Evaluator's comments

Good enough to publish ☐

Needs some tidying up ☐

Not worth publishing ☐

Same game already published on this micro ☐

Wouldn't load ☐

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Imagine yourself in a snake pit. The snakes and their eggs must be gobbled up before the snakes eat the Gobbler ... who must eat the last egg before the first snake. Eat the eggs, and more snakes are freed to attack. Eat all the snakes and the game begins again ... but faster! Faster!

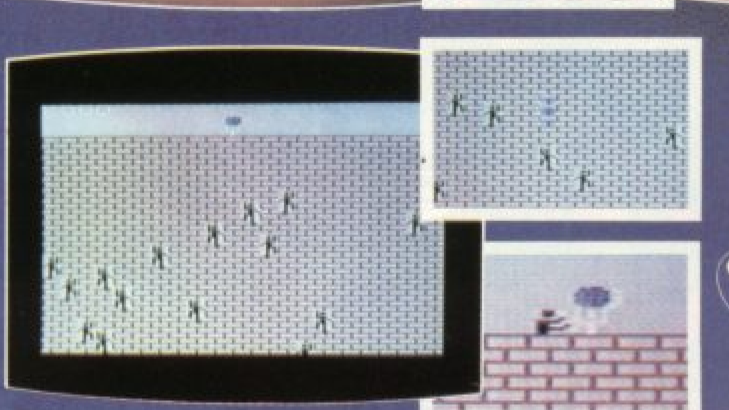
Luke's comment: "Better than Pacman. It's a reely fun game! 12570 eggs to gobble if you want to beat my best. Get it?"*

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Watchfulness and skill protect your castle from the encircling marauders in this **Siege.** Drop rocks to dislodge them, and their anger makes them faster ... and faster! Are you fast enough to hold them back from the top of the wall? Speed your reflexes.



Luke says — "Bet you can't keep the Glooms away as long as I did?" 4360 to beat! That's difficult.*



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Membership of The Microcomputer Software Club would save you money and trouble. Each month we thoroughly test and evaluate the many programs issued by the growing number of producers – including IJK, Bug-Byte, A & F, Campbell, C-Tech, Imagine, Lothlorien, DJK, Salamander, Bridge, and the smaller companies that you may find it difficult to keep track of. If a program is good, and it has got to be very good, it is recommended to our members in the next issue of the Newsletter.

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Members are not obliged to buy a fixed number of programs from The Club. They buy what they want when they want.

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FREE NEWSLETTER

Our latest Newsletter offers programs from most leading suppliers – and from a few that, perhaps, you do not yet know. A program has to be good, very good, before it is recommended to members. It also has to be reliable and, even before the members' discount, it has to be good value for money. Subject coverage includes adventure, arcade, education, strategy games, household applications, family games, business, utilities and programming aids.

CLUB EXPANDS TO INCLUDE COMMODORE 64 AND ORIC USERS

Two excellent new machines have just been added to our coverage – the Commodore 64 and the Oric. Software for these machines will be in our next Newsletter. Remember, membership is completely free of charge and you are under no obligation to buy anything from the Club unless you really want to. If you use a ZX81 (16k), Spectrum (16k or 48k), BBC (A or B), Dragon 32, Vic (expanded or unexpanded), Commodore 64 or Oric, you should join THE CLUB.

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TI 99/4A

BY P. PHELBY

WITH EXTENDED

BASIC & JOYSTICKS

Amphibians Anonymous are gathering on the far bank of the River Wrap-around to honour those that didn't make it.

Frogs from across the length and breadth of Texas are homing in on the river to take part in the service to deceased amphibia.

But there's a five lane highway to cross and traffic is no respecter of froggy limbs. And no frog wants to meet his flatmate when crossing the road.

Then there's the roaring torrent known as River Wraparound which must be crossed with the aid of a notoriously unreliable bus service of turtles – you can wait for ages then three come at once!

The logs make things a little easier but they travel so fast it's difficult not to get carried away.

Watch out for snakes and alligators on route and hope that you get to the bank in time not to miss the Top Toad's speech. . . it starts when the timer on the bottom of the screen goes down to zero.

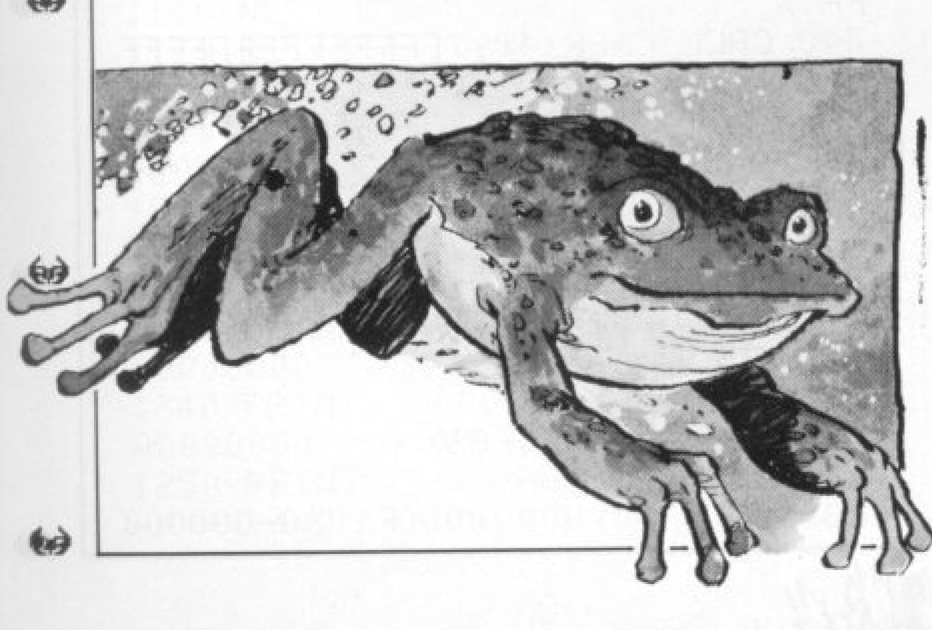
This arcade-speed action game is played on the TI with Extended Basic.

If you play with your shift lock key up then you'll have to change line 520 from K=121 to K=89.

FROGGER

```
100 CALL CLEAR :: CALL SCREEN(12
)
110 DISPLAY AT(10,6):"TI 99/4A
FROGGER  " :: DISPLAY AT(12,4):"
EXTENDED BASIC REQUIRED"
111 DISPLAY AT(14,6):"JOYSTICKS
REQUIRED"
114 FOR A=1 TO 800 :: NEXT A
120 DISPLAY AT(16,4):"program  1
983  p. pheby"
121 FOR A=1 TO 800 :: NEXT A
125 CALL CLEAR :: DISPLAY AT(1,5
):"   INSTRUCTIONS   " :: DISPLA
Y AT(13,1):"USE JOYSTICK TO CROS
S ROAD"
126 DISPLAY AT(15,1):"THEN USE F
IRE BUTTON TO HOP LOGS"
127 DISPLAY AT(20,1):"*** AIM FO
R REAR OF LOGS ***"
130 DISPLAY AT(22,7):"PRESS ANY
KEY" :: CALL KEY(0,K,S):: IF S=0
 THEN 130
135 CALL CLEAR :: CALL SCREEN(12
):: DISPLAY AT(5,4):"PRESS KEY F
OR SKILL LEVEL "
136 DISPLAY AT(7,8):"1 TO 4"
137 DISPLAY AT(9,4):"HIGHER NUMB
ERS GIVE FASTER   TRAFFIC AND LE
SS FROGS"
138 ACCEPT AT(12,8)SIZE(1)VALIDA
TE("1234"):SK$ :: SK=VAL(SK$)
140 CALL CLEAR :: CALL SCREEN(2)
:: SP=2+SK :: K=SK :: FRG=10-SK
150 CALL CHAR(112,"FFFFFFFFFFFF
FFF",113,"000000000000000")
160 CALL CHAR(120,"000000000087
F7C7F777F73000000000000000033FF
FF7F3FFFF520000000000")
170 CALL CHAR(124,"00000000080F
FE7FFBFFF7300000000000E0202030F
EE6FF66F65C000000000")
180 CALL CHAR(128,"0000000307552
7233F070F5F233F0100000000C0E0BBE
4C4FCE0F0FAC4FC8000")
190 CALL CHAR(132,"0003075527233
F03030303031F112800C0E0AAE4C4F
CC0C0C0C0C0C0F88814")
200 CALL CHAR(136,"000000002024
36300000000000000000000000000008
0C00000000000000000")
210 CALL CHAR(140,"0000002030383
C1E1F0D0F0B000000000000000040C1C3
C78E0E0E0400000000")
220 CALL CHAR(95,"00FF00000000FF
00")
230 CALL CHAR(96,"0000000707727
7F")
240 CALL CHAR(97,"7F27770000000
00")
250 CALL CHAR(98,"00000000EEEE4
FF")
260 CALL CHAR(99,"FFE4EE0E000000
00")
270 CALL COLOR(1,2,1,0,6,1,8,8,1
,9,8,1,11,6,2)
280 CALL HCHAR(12,1,95,32):: CAL
L HCHAR(23,1,95,32)
290 FOR D=3 TO 10 :: CALL HCHAR(
D,1,112,32):: NEXT D
300 FOR A=3 TO 4 :: CALL COLOR(A
,16,1):: NEXT A
310 CALL HCHAR(1,1,113,32):: CAL
L HCHAR(2,1,113,32):: CALL HCHAR
(11,1,113,32)
320 FOR Q=2 TO 32 STEP 2 :: CALL
 HCHAR(17,Q,95):: NEXT Q
330 DISPLAY AT(1,12):FRG
340 CALL MAGNIFY(3)
350 CALL SPRITE(#1,128,4,178,100
)
360 CALL SPRITE(#18,124,11,17,10
,0,2*SP,#19,124,11,17,90,0,2*SP)
```

```
370 CALL SPRITE(#20,124,11,33,1,
0,SP,#21,120,11,49,120,0,3*SP)
380 CALL SPRITE(#10,124,11,33,78
,0,SP)
390 CALL SPRITE(#13,120,11,49,90
,0,3*SP,#14,124,11,65,168,0,2*SP
)
400 CALL SPRITE(#2,99,12,97,150,
0,5*SP)
410 CALL SPRITE(#3,99,10,113,100
,0,6*SP,#6,99,14,113,50,0,6*SP)
420 CALL SPRITE(#4,99,5,161,20,0
,-4*SP,#7,99,12,161,100,0,-4*SP)
430 CALL SPRITE(#5,99,12,145,100
,0,-6*SP,#8,99,16,145,50,0,-6*SP
)
440 CALL POSITION(#1,H,J):: IF H
<=88 THEN CALL MOTION(#1,0,0)::
CALL LOCATE(#1,81,J):: GOTO 580
450 CALL JOYST(1,X,Y):: IF X=0 A
ND Y=0 THEN CALL PATTERN(#1,128)
ELSE CALL PATTERN(#1,132)
460 CALL MOTION(#1,-ABS(Y*4),X*4
)
470 CALL COINC(ALL,G):: IF G=0 T
HEN 440 ELSE 480
480 CALL SOUND(100,-5,1):: CALL
MOTION(#1,0,0):: CALL COLOR(#1,9
):: FOR G=1 TO 200 :: NEXT G
490 FRG=FRG-1 :: DISPLAY AT(1,12
):FRG
500 IF FRG=0 THEN 510 ELSE 530
510 CALL DELSPRITE(ALL):: CALL C
LEAR :: CALL COLOR(8,2,1):: CALL
 SCREEN(15):: DISPLAY AT(8,4):"N
O FROGS LEFT TO PLAY AGAIN     P
RESS Y/N"
520 CALL KEY(0,K,S):: IF S=0 THE
N 520 ELSE IF K=121 THEN RUN 135
 ELSE STOP
```



```
530 CALL LOCATE(#1,170,100):: CA
LL COLOR(#1,4):: GOTO 440
540 FRG=FRG+1 :: DISPLAY AT(1,12
):FRG :: K=K+1 :: IF K=12 THEN 1
000 ELSE SP=SP+1
550 CALL MOTION(#2,0,5*SP,#3,0,6
*SP,#4,0,-4*SP,#6,0,6*SP,#7,0,-4
*SP,#5,0,-6*SP,#8,0,-6*SP)
560 CALL MOTION(#10,0,SP,#13,0,3
*SP,#14,0,2*SP,#18,0,2*SP,#19,0,
2*SP,#19,0,2*SP,#20,0,SP,#21,0,3
*SP)
570 FOR G=1 TO 100 :: NEXT G ::
CALL LOCATE(#1,170,100):: CALL C
OLOR(#1,4):: GOTO 440
580 CALL POSITION(#1,H,J)
590 CALL KEY(1,K1,S1):: IF S1=0
THEN CALL PATTERN(#1,128):: GOTO
 580 ELSE CALL PATTERN(#1,132)::
 A=0
600 FL=0 :: H=H-16 :: CALL LOCAT
E(#1,H,J):: IF H=1 THEN CALL COL
OR(#1,1):: GOTO 540
610 CALL COINC(ALL,G):: IF G<>0
THEN 620 ELSE IF H=81 THEN FL=0
:: GOTO 580 ELSE FL=0 :: GOTO 48
0
620 IF FL=1 THEN 580
630 IF J+3*SP>256 THEN FL=0 :: G
OTO 480
640 ON (H-1)/16 GOTO 650,660,670
,680,650
650 A=2*SP :: CALL LOCATE(#1,H,J
+SP):: CALL MOTION(#1,0,A):: FL=
1 :: CALL SOUND(10,3000,1):: GOT
O 580
660 A=SP :: CALL LOCATE(#1,H,J+S
P):: CALL MOTION(#1,0,A):: FL=1
:: CALL SOUND(10,3000,1):: GOTO
580
670 A=3*SP :: CALL LOCATE(#1,H,J
+SP):: CALL MOTION(#1,0,A):: FL=
1 :: CALL SOUND(10,3000,1):: GOT
O 580
680 A=2*SP :: CALL LOCATE(#1,H,J
+SP):: CALL MOTION(#1,0,A):: FL=
1 :: CALL SOUND(10,3000,1):: GOT
O 580
1000 CALL CLEAR :: CALL CHARSET
1010 DISPLAY AT(2,1):"YOU HAVE C
OMPLETED   ALL  THE  SCREENS"
1012 DISPLAY AT(4,1):"NOW TRY AG
AIN BUT DON'T KILL ANY FROGS" ::
 RUN 135
```



BY P. BURROWS

You may not be able to pass your driving test after twelve sessions with this Texas program but it's worth typing in just for the 3D graphics.

You are seated at the wheel and your view is of the bonnet of the car seen through the windscreen. Cars are coming towards you which you have to avoid as best you can.

The graphics are very well programmed; the cars start in the background as small blobs and get larger and more recognizable as they approach you.

Use the Z and full stop keys to move left and right respectively and see how much of the 100 mile course you can cover.

3D ROAD RACE

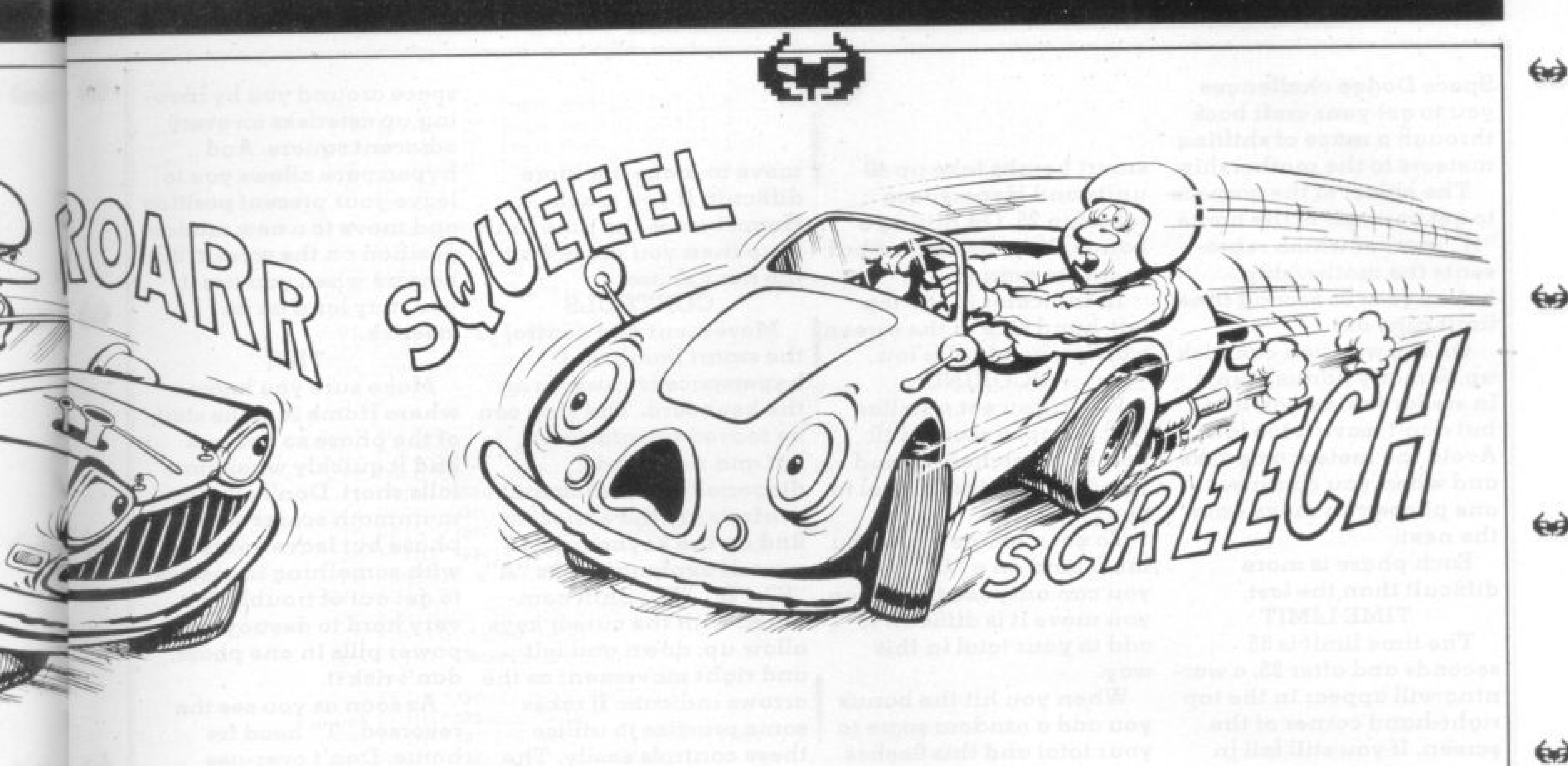
```
100 CALL CLEAR
110 CALL SCREEN(8)
120 INPUT "DO YOU WANT INSTRUCTI
ONS":Q$
130 IF SEG$(Q$,1,1)="N" THEN 600
 ELSE 140
140 IF SEG$(Q$,1,1)<>"Y" THEN 12
0
150 CALL CLEAR
160 R=1
170 M$="ROAD RACE"
180 GOSUB 520
190 R=2
200 M$="*********"
210 GOSUB 520
220 R=4
230 M$="YOU ARE THE DRIVER OF A
CAR"
240 GOSUB 520
250 R=5
260 M$="YOUR POSITION IS SHOWN B
Y THE"
270 GOSUB 520
280 R=6
290 M$="CARS BONNET SCOOP"
300 GOSUB 520
310 R=8
320 M$="TO MOVE PRESS Z FOR LEFT
"
330 GOSUB 520
340 R=9
350 M$="AND > FOR RIGHT"
360 GOSUB 520
370 R=11
380 M$="TO DODGE THE ON COMING T
RAFFIC"
390 GOSUB 520
400 R=13
410 M$="AFTER YOUR VIEW IS SHOWN
"
420 GOSUB 520
430 R=15
440 M$="PRESS ANY KEY TO BEGIN"
450 GOSUB 520
460 R=17
470 M$="YOUR JOURNEY"
480 GOSUB 520
490 FOR DELAY=1 TO 500
500 NEXT DELAY
510 GOTO 600
520 C=16-LEN(M$)/2
530 FOR I=1 TO LEN(M$)
540 CALL HCHAR(R,C+I,30)
550 CALL HCHAR(R,C+I,ASC(SEG$(M$
,I,1)))
560 NEXT I
570 CALL SOUND(100,660,0)
580 CALL SOUND(100,770,0)
590 RETURN
600 CALL CLEAR
610 RANDOMIZE
620 X=6
630 CALL SCREEN(15)
640 FOR I=2 TO 16
650 CALL COLOR(I,15,15)
660 NEXT I
670 REM   edse of road chars
680 CALL CHAR(43,"FFFEFCF8F0E0C0
80")
690 CALL CHAR(45,"FF7F3F1F0F0703
01")
700 CALL CHAR(49,"FFFEFCF8F0E0C0
80")
710 CALL CHAR(50,"FF7F3F1F0F0703
01")
720 REM   grass
730 CALL CHAR(42,"FFFFFFFFFFFFFF
FF")
740 CALL CHAR(48,"FFFFFFFFFFFFFF
FF")
750 CALL CHAR(128,"FFFFFFFFFFFFF
FFF")
760 REM   first car char
770 CALL CHAR(136,"003C427E5AFFB
D81")
780 REM      End car chars
790 FOR C=144 TU 147
800 READ A$
810 CALL CHAR(C,A$)
820 NEXT C
830 DATA 00000000000F1030,000000
```




```
0000F0080C,303F33F3FFFFCFC0,
0CFCCCCFFFFFF303
840 RESTORE 830
850 FOR C=152 TO 155
860 READ A$
870 CALL CHAR(C,A$)
880 NEXT C
890 REM  3rd car chars
900 FOR C=65 TO 70
910 READ A$
920 CALL CHAR(C,A$)
930 NEXT C
940 DATA 0007060C38303F33,00FFFF
000000FFFF,00E060301C0CFCCC,E1E1
F3FFE3E3E0E0,FFFFFFFFFFFF,8787CF
FFC7C70707
950 RESTORE 940
960 FOR C=97 TO 102
970 READ A$
980 CALL CHAR(C,A$)
990 NEXT C
1000 REM  4th car chars
1010 FOR C=80 TO 85
1020 READ A$
1030 CALL CHAR(C,A$)
1040 NEXT C
1050 DATA 0000010303060E18,0000F
FFF,000080C0C0607018,1818181818F
FFFFF,0000FFFFFFFFFFFF,FFFFFFF9F
0F0F0F0,
1060 DATA FFFFFFFFFFFF,FFFFFF9F0F0
F0F0F
1070 RESTORE 1060
1080 FOR C=86 TO 87
1090 READ A$
1100 CALL CHAR(C,A$)
1110 NEXT C
1120 RESTORE 1050
1130 FOR C=112 TO 117
1140 READ A$
1150 CALL CHAR(C,A$)
1160 NEXT C
1170 RESTORE 1060
1180 FOR C=118 TO 119
1190 READ A$
1200 CALL CHAR(C,A$)
1210 NEXT C
1220 PRINT " ***********+  h  -**
********"
1230 PRINT " 0000000001   h   20
00000000"
1240 PRINT " 000000001    x    2
00000000"
1250 PRINT " ********+ ABC x abc
-*******"
1260 PRINT " ******+  DEF x def
 -******"
1270 PRINT " *****+       h
  -*****"
1280 PRINT " 00001 PQQR   h    pq
qr 20000"
1290 PRINT " 0001  STTS   h    st
ts  2000"
1300 PRINT " 001   UVVW   h    uv
vw   200"
1310 PRINT " 01           x
     20"
1320 PRINT " +            x
      -"
1330 PRINT "         HHHHHHHHX88888
888   "
1340 PRINT "        HHHHHHHHXXX8888
8888    "
1350 PRINT "        HHHHHHHHXXX8888
8888    "
1360 PRINT " XXXXXXXXXXXXXXXXXXX
XXXXXXXX"
1370 PRINT
1380 PRINT
1390 FOR SKY=1 TO 6
1400 CALL HCHAR(SKY,4,128,27)
1410 NEXT SKY
1420 REM  draw first car
1430 CALL HCHAR(6,17,136)
1440 REM  draw 2nd car
1450 R=7
1460 C=15
1470 CALL HCHAR(R,C,144)
1480 CALL HCHAR(R,C+1,145)
1490 CALL HCHAR(R+1,C,146)
1500 CALL HCHAR(R+1,C+1,147)
1510 C=18
1520 CALL HCHAR(R,C,152)
1530 CALL HCHAR(R,C+1,153)
1540 CALL HCHAR(R+1,C,154)
1550 CALL HCHAR(R+1,C+1,155)
1560 REM  13 sky
1570 CALL COLOR(13,8,8)
1580 REM  14 first car
1590 CALL COLOR(14,8,8)
1600 REM  2 grass 1
1610 CALL COLOR(2,3,15)
1620 REM  3 grass 2
1630 CALL COLOR(3,4,15)
1640 REM  10 white line 1
1650 CALL COLOR(10,16,16)
1660 REM  12 white line 2
1670 CALL COLOR(12,15,15)
1680 CALL COLOR(8,2,2)
1690 CALL COLOR(6,2,2)
```

68

```
1700 GOSUB 3040
1710 CALL KEY(0,K,S)
1720 IF S=0 THEN 1710
1730 CALL SOUND(150,-7,0)
1740 SK=9
1750 MILES=0
1760 K=20
1770 GOTO 1830
1780 IF MILES=400 THEN 2840
1790 IF MILES=K THEN 1800 ELSE 1
830
1800 IF SK<2 THEN 1830
1810 SK=SK-1
1820 K=K+20
1830 C=INT(12*RND)+2
1840 RAN=INT(SK*RND)+1
1850 ON RAN GOSUB 1880,2260,1980
,2360,2640,2640,2640,2640,2640
1860 MILES=MILES+1
1870 GOTO 1780
1880 REM  move car 1
1890 IF MILES<320 THEN 1910
1900 X=1
1910 R=INT(X*RND)+1
1920 IF R>1 THEN 1940
1930 CALL SOUND(-5,200,0)
1940 CALL COLOR(14,C,8)
1950 IF R=1 THEN 1970
1960 GOSUB 2640
1970 CALL COLOR(14,8,8)
1980 CALL COLOR(15,C,15)
1990 IF R=1 THEN 2010
2000 GOSUB 2640
2010 CALL COLOR(15,15,15)
2020 CALL COLOR(5,C,15)
2030 IF R<2 THEN 2060
2040 GOSUB 2640
2050 GOTO 2170
2060 CALL KEY(0,K,S)
2070 IF K=90 THEN 2140
2080 IF K=46 THEN 2100
2090 GOTO 2170
2100 CALL COLOR(6,15,15)
2110 CALL COLOR(4,2,2)
2120 DIR=1
2130 GOTO 2170
2140 CALL COLOR(4,15,15)
2150 CALL COLOR(6,2,2)
2160 DIR=0
2170 CALL COLOR(5,15,15)
2180 CALL COLOR(7,C,15)
2190 IF R=1 THEN 2210
2200 GOSUB 2640
2210 CALL COLOR(7,15,15)
2220 CALL SOUND(-5,660,0)
2230 IF (DIR=0)*(RAN=1)THEN 2890
2240 IF (DIR=0)*(RAN=3)THEN 2890
2250 RETURN
2260 REM  move car 2
2270 IF MILES<320 THEN 2290
2280 X=1
2290 R=INT(X*RND)+1
2300 CALL COLOR(14,C,8)
2310 IF R>1 THEN 2330
2320 CALL SOUND(-3,1000,0)
2330 IF R=1 THEN 2350
2340 GOSUB 2640
2350 CALL COLOR(14,8,8)
2360 CALL COLOR(16,C,15)
2370 IF R=1 THEN 2390
2380 GOSUB 2640
2390 CALL COLOR(16,15,15)
2400 CALL COLOR(9,C,15)
2410 IF R<2 THEN 2440
2420 GOSUB 2640
2430 GOTO 2550
2440 CALL KEY(0,K,S)
2450 IF K=90 THEN 2520
2460 IF K=46 THEN 2480
2470 GOTO 2550
2480 CALL COLOR(6,15,15)
2490 CALL COLOR(4,2,2)
2500 DIR=1
2510 GOTO 2550
2520 CALL COLOR(4,15,15)
2530 CALL COLOR(6,2,2)
2540 DIR=0
```




```
2550 CALL COLOR(9,15,15)
2560 CALL COLOR(11,C,15)
2570 IF R=1 THEN 2590
2580 GOSUB 2640
2590 CALL COLOR(11,15,15)
2600 CALL SOUND(-5,770,0)
2610 IF (DIP=1)*(RAN=2)THEN 2890
2620 IF (DIR=1)*(RAN=4)THEN 2890
2630 RETURN
2640 CALL COLOR(2,3,15)
2650 CALL COLOR(3,4,15)
2660 CALL COLOR(10,16,16)
2670 CALL COLOR(12,15,15)
2680 CALL KEY(0,K,S)
2690 IF K=46 THEN 2760
2700 IF K=90 THEN 2800
2710 CALL COLOR(2,4,15)
2720 CALL COLOR(3,3,15)
2730 CALL COLOR(10,15,15)
2740 CALL COLOR(12,16,16)
2750 RETURN
2760 CALL COLOR(6,15,15)
2770 CALL COLOR(4,2,2)
2780 DIR=1
2790 GOTO 2710
2800 CALL COLOR(4,15,15)
2810 CALL COLOR(6,2,2)
2820 DIR=0
2830 GOTO 2710
2840 CALL CLEAR
2850 GOSUB 3040
2860 PRINT "WELL DONE"
2870 PRINT "YOU TRAVELED";MILES;
"MILES"
2880 END
2890 FOR I=1 TO 30 STEP 2
2900 CALL SCREEN(2)
2910 CALL SOUND(-1000,-7,I)
2920 CALL SCREEN(16)
2930 NEXT I
2940 CALL SCREEN(15)
2950 MILES=MILES/4
2960 CALL CLEAR
2970 PRINT "YOU MANAGED TO GET"
2980 PRINT
2990 PRINT MILES;"MILES"
3000 PRINT
3010 PRINT "DOWN THE ROAD"
3020 PRINT "BEFORE CRASHING"
3030 END
3040 REM music
3050 RESTORE 3100
3060 READ NOTE,DUR
3070 IF (NOTE=0)*(DUR=0)THEN 31
20
3080 CALL SOUND(DUR,NOTE,0)
3090 GOTO 3060
3100 DATA 294,150,294,150,294,15
0,392,300,494,300,294,150,294,15
0,294,150,392,300,494,300,392,15
0,392,150
3110 DATA 349,150,349,150,330,15
0,330,150,294,500,0,0
3120 RETURN
```



BY ALAN HALL

IN 3.5K

Space Dodge challenges you to get your craft back through a maze of shifting meteors to the mothership.

The object of the game is to get yourself to the home "H" marker which represents the mothership before your 35 second time limit runs out.

On the way you can pick up as many bonus points in stellar fuel as you like but don't leave it too late. Avoid the meteor asterisks and when you conquer one phase you move onto the next.

Each phase is more difficult than the last.

TIME LIMIT

The time limit is 35 seconds and after 25, a warning will appear in the top right-hand corner of the screen. If you still fail in your quest the game stops after 35 seconds and a bell sounds.

FUEL

You start with 200 units of fuel on board the ship but it gets used up quickly. Each move costs 5 points, smart bombs take up 40 units and Hyperspace takes up 25. On hitting a bonus, 20 units are lost but more are gained.

In indicator in the top left-hand side of the screen warns when fuel is low.

SCORING

When you eat a stellar fuel dump, a score of 10 points is notched up and you add 20 points of fuel to your reserves.

To get a bonus score you must land on a "O" and as you can only see this when you move it is difficult to add to your total in this way.

When you hit the bonus you add a random score to your total and this flashes up in the top of the screen and the same amount of fuel units is added to the tanks.

HOME

Home is randomly placed on the screen and only flashes up when you move to make life more difficult. If you reach Home before the time limit is up then you move onto the next phase.

CONTROLS

Movement and control of the smart bomb and hyperspace features is on the keyboard. The ship can be moved up and down, left and right and diagonally. The diagonal controls are the easiest to find on the keyboard and are self explanatory as "A", "S", "Z", "X". Shift combined with the cursor keys allow up, down and left and right movement as the arrows indicate. It takes some practise to utilise these controls easily. The space bar works as a smart bomb and the "=" sign is a Hyperspace.

SMART BOMBS

You only have three smart bombs in each phase controlled by the space bar. It clears the space around you by blowing up asterisks on every adjacent square. And hyperspace allows you to leave your present position and move to a new random position on the screen. But beware when you use it, you may land on an asterisk.

TIPS

Make sure you know where Home is at the start of the phase so you can find it quickly when time falls short. Don't aim for mammoth scores each phase but leave yourself with something in reserve to get out of trouble. It's very hard to destroy all 20 power pills in one phase, don't risk it.

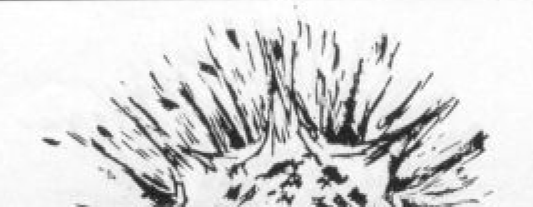
As soon as you see the reversed "T" head for home. Don't over-use hyperspace it will result in a nasty end. Landing on the screen border results in instant hyperspace as well.

A good score to aim for is 200 points but the author's high score is 1,255 points in five phases.

SPACE DODGE

```
0 CLR R=125 POKE36879,12 POKE36878,15 POKE650,255 PO=200 GOSUB1490
1 Y=0 P=1
4 A=7933 H=0 I=42 FL=200
5 PRINT"■"
10 FORL=0 TO R
20 B=7680+INT(506*RND(1))
30 POKE36874,255 FORT=0TO10 NEXT POKE36874,0 POKEB,42 NEXT
60 FOR C=0 TO20
70 D=0 D=7680+INT(506*RND(1))
75 POKE36875,255 FORT=0TO10 NEXT POKE36875,0 POKED,81 NEXT
95 GOSUB1000
96 POKE7933,32
100 X=7680+INT(506*RND(1)) IF PEEK(X)<>32ORX=ATHEN100
110 POKEX,8
111 GOSUB1400
113 TIME$="000000" PRINT"■■■F■"
114 IF PEEK(A)=32 THEN130
115 IFPEEK(A)=42THENPOKE36876,150 FORT=0TO1000 NEXT POKE36876,0 GOTO200
116 IF PEEK(A)=8THEN290
117 IFPEEK(A)=81THENPOKE36874,200 FORT=0TO200 NEXT POKE36874,0 GOTO400
119 IF PEEK(A)=160ORPEEK(A)=134ORPEEK(A)=140ORPEEK(A)=148THEN 600
120 IFPEEK(A)=87THEN1440
121 A=7933
130 POKEA,90
140 GETA$ IF A$="" THEN POKEOI,32 POKEX,32 GOTO1290
141 POKE36875,255 FORT=0TO25 NEXT POKE36875,0
142 POKEOI,87 POKEX,8
144 IFTIME$>="000025"THEN PRINT"■";TAB(21);"■T■"
145 IF TIME$>="000035" THEN 490
146 FL=FL-5 IF FL<50 THEN PRINT"■■L■"
147 IF FL>50 THEN PRINT"■■■F■"
148 IFFL<=0THENPRINT"■■■EMPTY■" FORT=0TO2000 NEXT FL=0 GOTO208
150 POKEA,32
160 IF A$="■" THEN A=A+1 GOTO114
165 IF A$="■" THEN A=A-1 GOTO114
166 IF A$="X" THEN A=A+23 GOTO114
167 IF A$="A" THEN A=A-23 GOTO114
```

```
168 IF A$="S" THEN A=A-21:GOTO114
170 IF A$="Z" THEN A=A+21:GOTO114
180 IF A$="⌐" THEN A=A-22:GOTO 114
185 IF A$="■" THEN A=A+22:GOTO 114
190 IF A$="=" THEN GOTO 600
192 IF A$=" " THEN GOTO 690
195 GOTO 130
198 FORT=255 TO 128 STEP-1:POKE36877,T:FORI=0TO30:NEXTI:NEXT:POKE36877,128
199 FORU=0TO2000:NEXT:POKE36877,0
200 POKEA,42:POKEA+1,32:POKEA-1,32:POKEA-22,32:POKEA+22,32:POKEA+21,78:POKEA-21
78
201 POKEA+23,77:POKEA-23,77
202 FORT=255 TO 128 STEP-1:POKE36877,T:FORI=0TO30:NEXTI:NEXT:POKE36877,128
203 FORU=0TO2000:NEXT:POKE36877,0
206 POKEA,32:POKEA+1,32:POKEA-1,32:POKEA-22,32:POKEA+22,32:POKEA+21,32:POKEA-21
32
207 POKEA+23,32:POKEA-23,32:GOSUB1000:FORT=0TO2000:NEXT:GOTO212
208 POKE36879,25:PRINT"⌐■■■OUT OF FUEL":GOTO213
212 POKE36879,25:PRINT"⌐■■■YOU GOT BLOWN UP"
213 PRINT"■■HARD LUCK"
214 PRINT"■■SCORE";Y;"POINTS"
215 PRINT"■■YOU LASTED THROUGTH  ";P;"PHASE(S)"
220 PRINT"■■HIT ANY KEY"
230 POKE198,0:WAIT198,1
240 GOTO 0
290 FORT=128 TO 255:POKE36875,T:NEXT:POKE36875,0
295 FORT=0TO1000:NEXT
300 PRINT"⌐■■■BRILLIANT"
305 P=P+1
310 PRINT"■■YOU HAVE MADE IT"
320 PRINT"■■WELL DONE"
330 PRINT"■■TIME WAS ";RIGHT$(TIME$,2);" SECONDS"
340 PRINT"■■SCORE";Y;"POINTS"
350 PRINT"■■YOU NOW GO ONTO        PHASE";P
351 POKE198,0
360 PRINT"■■HIT ANY KEY FOR       PHASE";P:R=R+UI
370 POKE198,0:WAIT198,1
380 GOTO 4
400 Y=Y+10:FL=FL+20:GOTO 130
490 FORT=0 TO 50:POKE36876,255:FORO=0TO10:NEXT:POKE36876,0:NEXT:POKE36876,0
491 FORT=0 TO 1000:NEXT
500 PRINT"⌐■■■YOU HAVE RUN OUT OF   TIME":GOTO213
600 D=7680+INT(506*RND(1))
605 FORT=255 TO 150 STEP-1:POKE36877,T:NEXT:POKE36877,0
610 A=D:FL=FL-25
630 GOTO 114
690 H=H+1
695 IF H>3 THEN PRINT"■■■    NO SMART BOMBS■":GOSUB1000:GOTO130
697 FORT=0TO10:POKE36876,128:POKE36876,0:NEXT
698 FL=FL-40
700 POKEA,90:POKEA+1,32:POKEA-1,32:POKEA-22,32:POKEA+22,32:POKEA+21,32:POKEA-21
32
710 POKEA+23,32:POKEA-23,32:GOSUB1000
720 GOTO 130
1000 FORJ=7680TO7701:POKEJ,160:NEXT:FORJ=8164TO8185:POKEJ,160:NEXT
1010 FORJ=7680TO8164STEP22:POKEJ,160:NEXT:FORJ=7701TO8185STEP22:POKEJ,160:NEXT
1210 RETURN
1290 IF TIME$>="000035" THEN 490
1291 IFTIME$>="000025"THEN PRINT"■";TAB(21);"■T■"
1292 IF FL<50 THEN PRINT"■■■L■"
1300 FORT=0TO2
1301 V=0:V=7680+INT(506*RND(1))
1310 IF PEEK(V)=42 THEN POKEV,32:GOTO 1340
1320 IF PEEK(V)<>32 THEN POKEV,PEEK(V):GOTO1301
1330 POKEV,32
1340 NEXTT
1345 FORU=0 TO 3
1350 O=7680+INT(506*RND(1))
1360 IF PEEK(O)<>32 THEN POKEO,PEEK(O):GOTO1350
1370 POKE36874,255:FORT=0TO10:POKE36874,0:POKEO,I
1380 NEXT
1390 GOTO 140
1400 OI=7680+INT(506*RND(1))
1410 IFPEEK(OI)<>32THEN1400
1420 POKEOI,87
1430 RETURN
1440 FL=FL-20:PO=PO+10:SCO=INT(PO*RND(1)):PRINT"■■■■■■■■■R*";SCO;"*■"
1441 FORT=0TO50:POKE36875,255:POKE36875,0:NEXT:FL=FL+SCO:Y=Y+SCO
1450 FORT=0TO500:NEXT:PRINT"■■■■■■■■■R          ■":IFPO>500THENPO=200
1460 GOSUB1400:GOTO130
1490 PRINT"⌐":FORT=128TO255:POKE36874,T:NEXT:POKE36874,0
1492 FORT=255TO128STEP-1:POKE36874,T:NEXT:POKE36874,0:FORT=0TO1000:NEXT
1500 PRINT"■■■■■■■■■■■SPACE DODGE":PRINT"■■■■■BY A.HALL":PRINT"■■■■■HIT ANY
KEY"
1501 UI=15+INT(15*RND(1))
1510 POKE198,0:WAIT198,1:POKE198,0
1520 PRINT"■■■■■LEVEL";UI:FORT=0TO1500:NEXT:RETURN:END
```



SPECTRUM

BY T. BOONE

IN 16K

The mighty Kong has been rampaging through the arcades for some time – but now you can allow this not so cuddly gorilla into your own home thanks to KK addict Timothy Boone!

Tim has already written a Kong program for the Pet which we have printed but now he has adapted his interpretation of the arcade game's fourth screen – regarded as the toughest screen of all – for the Spectrum.

If you have not played the game before, you don't know what you're missing. Kong, the gruesome gorilla, has grabbed the girl and taken her to the top of the Empire State Building.

Jump-Man, so-called because of his amazing jumping ability, must try to rescue her from Kong's clutches.

The game takes up the story in the attic section of the building. When you run the program you will see Kong and the captured girl at the top of the attic. Eight plugs hold the attic's rafters in place.

Jump-Man has to try to knock out these plugs by walking or jumping over them. If you manage to knock out all eight plugs you send Kong crashing to his doom and rescue the girl.

The plugs are guarded by four deadly moving fireballs – which you must avoid at all costs and which can also burn away the top and bottom rungs of the ladders, restricting Jump-Man's movement.

For each plug removed you score 100 points. If you conquer Kong you win the bonus and the level increases by one. The program then loops and you get another chance to challenge the king sized chimp.

You start with three lives and can lose these in many ways: touching a fireball, falling from a burnt ladder, jumping off the rafters or falling through plug holes. Do not go too close to Kong's lair – you may regret it.

The cursor keys give your walking and climbing direction. "1" will cause Jump-Man to jump left and "0" will cause him to jump right.

A high score function is included in the game. The high scorer's name being printed in the HIGH BY box during the game.

The program comes in two parts. Load part one (LOAD "GRAPHICS") and run this program. The computer will then set up the 21 User-Defined Graphics used in the game. When the program tells you to, load the game program (LOAD "KONG") and run the game. You should now see Kong holding a girl aloft and challenging: HOW HIGH CAN YOU TRY? As in the arcade game. You should key in and run part one then SAVE it and then key in and run part two.

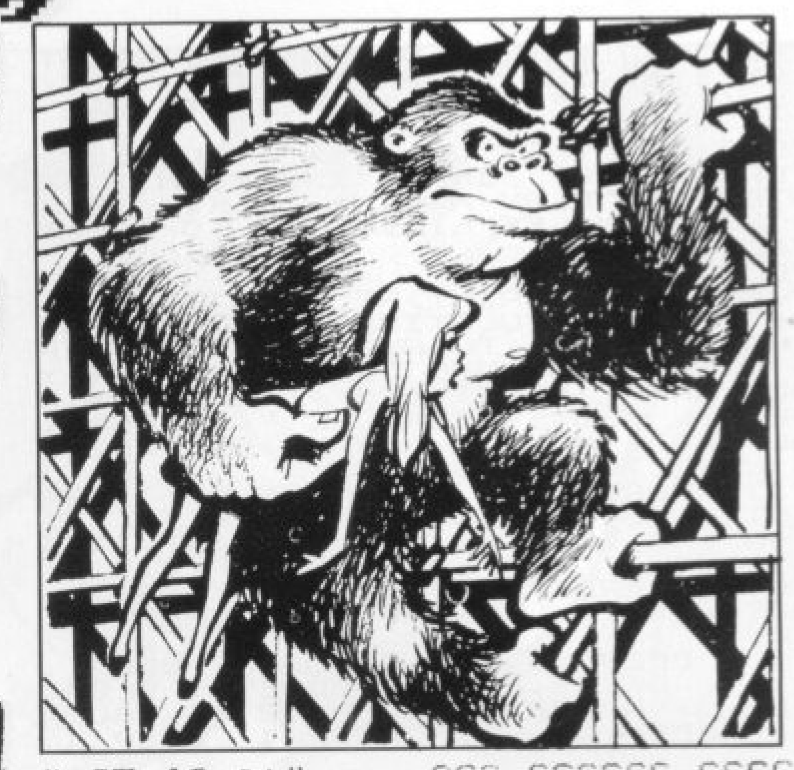
A and B = vertical and horizontal co-ordinates of Jump-Man
SC = score (including the bonuses BO); P = number of plugs gone (if P = 8 then the Spectrum goes into the Kong fall routine.)
F1–F4 and B1–B4 = position of fireballs; B5–B8 = the random element of the fireballs.
H$ = the name of the high scorer. L1 = lives (initially 3).
Lines 1–10 = setting up of variables. 12–14 = walk and climb sound. 100–300 = fireball movement and kill checks. 399–599 = scenary. 20–89 = main program (Jump-Man movement etc). 7000 = Jump-Man's dying routine. 7100–7300 = Kong's challenge. 7300–7700 = Kong fall and death routine. 7800–7990 = jumping subroutines. 8500–8600 = instructions.

KRAZY KONG

```
   5 BORDER 6: PAPER 6: CLS : PR
INT AT 10,6; FLASH 1;"PLEASE WAI
T"
  10 FOR f=144 TO 164
  20 FOR n=0 TO 7: READ z: POKE
USR CHR$ f+n,z: BEEP .005,RND*50
: NEXT n: NEXT f
  30 PAPER 5: INK 0: CLS : BEEP
.5,10: PRINT AT 10,0;" THE USER
DEFINED GRAPHICS HAVE  BEEN SET
UP. NOW LOAD THE GAME."
 100 DATA 153,90,36,60,126,255,2
4,60,195,195,195,255,255,195,195
,195,255,195,129,129,129,129,195
,255,104,120,48,62,63,15,7,3,24,
102,66,153,153,66,102,24,24,24,1
,255,24,216,168,12,24,24,128,255
,24,27,21,48,88,88,65,126,24,120
,72,12,24,24,1,255,24,25,255,128
,24,24,128,255,24,152,255,1,1,2,
4,8,48,64,135,4,32,79,137,9,75,7
5,72,72,148,151,148,180,212,151,
144,144
 110 DATA 72,64,65,114,4,57,66,1
32,0,0,0,0,14,30,63,63,0,56,124,
214,254,238,69,123,0,0,0,0,240,2
48,252,252,57,125,125,59,3,0,3,7
,255,219,255,255,255,60,165,195,
156,190,190,220,192,0,192,224,22
,30.12.124.252,240,224,192

   1 LET hi=0: LET H$=" ": GO SU
B 8500
   2 LET sc=0: LET le=0: LET li=
3
   3 GO TO 7100
   5 LET ni=9: LET f=4: LET s=7:
 LET A=600: LET m=6: LET n=3: LE
T e=0: LET r=2: LET t=1: LET bo=
3000: LET p=0: LET o=41: LET v=4
3: LET w=110: LET q=40: LET l=12
0: LET g=5
   8 LET f1=8: LET f2=11: LET f3
=14: LET f4=17: LET b1=18: LET b
2=7: LET b3=15: LET b4=14
  10 GO TO 360
  12 BEEP .0008,20: BEEP .0008,1
5: RETURN
  13 BEEP .0008,35: RETURN
  14 BEEP .001,15: RETURN
  15 IF ATTR (a+1,b)=40 THEN PRI
NT AT a+1,b; INK 1;"B"
  16 IF ATTR (a-1,b)=40 AND ATTR
 (a-2,b)<>43 AND ATTR (a-2,b)<>4
7 AND ATTR (a-2,b)<>110 THEN PRI
NT AT a-1,b; INK 1;"B"
  17 RETURN
  18 LET a=20: LET b=r
  20 LET c=a: LET d=b: IF p>7 TH
EN GO TO 7300
  22 PRINT AT 4,24;bo;"  ";AT 0,
5;sc;AT 0,17;hi;AT 0,29;le: IF b
o=0 THEN GO TO 7000
  24 GO SUB 100
  25 IF INKEY$="5" THEN GO SUB 1
2: GO SUB 90
  26 IF INKEY$="8" THEN GO SUB 1
2: GO SUB 92
  27 IF INKEY$="7" AND ATTR (a-t
,b)=o THEN GO SUB 13
  28 IF INKEY$="6" AND ATTR (a+t
,b)=o THEN GO SUB 14
  30 LET a=a+(INKEY$="6" AND a<2
1 AND ATTR (a+1,b)=41)-(INKEY$="
7" AND a>1 AND ATTR (a-1,b)=41)
```

```
  35 LET b=b+(INKEY$="8" AND b<3
0)-(INKEY$="5" AND b>0)
  40 PRINT AT c,d;" "
  42 IF b<=d THEN PRINT AT a,b;
INK e;"G"
  44 IF b>=d THEN PRINT AT a,b;
INK e;"F"
  45 IF a<>c THEN PRINT AT a,b;
INK e;"H"
  47 IF ATTR (a+1,b)=40 AND ATTR
 (a-1,b)<>41 AND ATTR (a-2,b)<>4
3 THEN GO TO 7000
  48 IF ATTR (a+1,b)=47 THEN GO
TO 7000
  53 IF ATTR (a+2,b+1)=41 OR ATT
R (a-1,b+1)=41 THEN PRINT AT a,b
+1; INK 1;"B"
  55 IF ATTR (a+2,b-1)=41 OR ATT
R (a-1,b-1)=41 THEN PRINT AT a,b
-1; INK 1;"B"
  60 GO SUB 15
  70 IF INKEY$="0" THEN GO SUB 7
800
  80 IF INKEY$="1" THEN GO SUB 7
900
  89 LET bo=bo-10: GO TO 20
  90 IF ATTR (a+1,b+1)=110 THEN
PRINT AT a+1,b+1; INK 7;" ": LET
 p=p+1: LET sc=sc+100
  91 RETURN
  92 IF ATTR (a+1,b-1)=110 THEN
PRINT AT a+1,b-1; INK 7;" ": LET
 p=p+1: LET sc=sc+100
  93 RETURN
 100 LET b5=INT (RND*3): LET b6=
INT (RND*3): LET b7=INT (RND*3):
 LET b8=INT (RND*3)
 120 IF b5>1 THEN LET b5=-1
 130 IF b6>1 THEN LET b6=-1
 140 IF b7>1 THEN LET b7=-1
 150 IF b8>1 THEN LET b8=-1
 160 LET b1=b1+b5: LET b2=b2+b6:
 LET b3=b3+b7: LET b4=b4+b8
 170 PRINT AT f1,b1-b5;" ": PRIN
T AT f1,b1+b5; PAPER 6; INK 2; F
LASH 1;"E": LET b1=b1+b5: IF b1>
20 OR b1<10 THEN PRINT AT f1,b1;
" ": LET b1=b1-b5*2: PRINT AT f1
,b1; FLASH 1;"E"
 190 PRINT AT f2,b2-b6;" ": PRIN
T AT f2,b2+b6; PAPER 3; INK 7; F
LASH 1;"E": LET b2=b2+b6: IF b2>
26 OR b2<4 THEN PRINT AT f2,b2;"
 ": LET b2=b2-b6*2: PRINT AT f2,
b2; FLASH 1;"E"
 210 PRINT AT f3,b3-b7;" ": PRIN
T AT f3,b3+b7; PAPER 3; INK 0; F
LASH 1;"E": LET b3=b3+b7: IF b3>
27 OR b3<3 THEN PRINT AT f3,b3;"
 ": LET b3=b3-b7*2: PRINT AT f3,
b3; FLASH 1;"E"
 230 PRINT AT f4,b4-b8;" ": PRIN
T AT f4,b4+b8; PAPER 6; INK 4; F
LASH 1;"E": LET b4=b4+b8: IF b4>
29 OR b4<0 THEN PRINT AT f4,b4;"
 ": LET b4=b4-b8*2: PRINT AT f4,
b4; FLASH 1;"E"
 300 IF ATTR (a,b+1)>120 OR ATTR
 (a,b-1)>120 OR ATTR (a+1,b)>120
 OR ATTR (a-1,b)>120 THEN GO TO
7000
 350 RETURN
 366 BORDER g: PAPER g: CLS : PR
INT AT t,16; INK e;"KL";AT r,16;
 INK e;"MN";AT n,15; INK m;"A";A
T f,13; INK n;"█████";AT S,13; I
NK e;"BOPQB";AT m,13; INK e;"BRS
TB";AT S,13;"B";AT S,14; INK n;"
███";AT S,17; INK e;"B";AT 8,13;
"B   B";AT ni,13; INK S;"█";AT n
i,17;"█"
 400 PRINT AT m,e; INK n;"
      ";AT m,18; INK n;"
      ";AT ni,e; INK n;"
C C "; INK S;"█████"; INK n;"C";
INK S;"████"; INK n;" C C
```

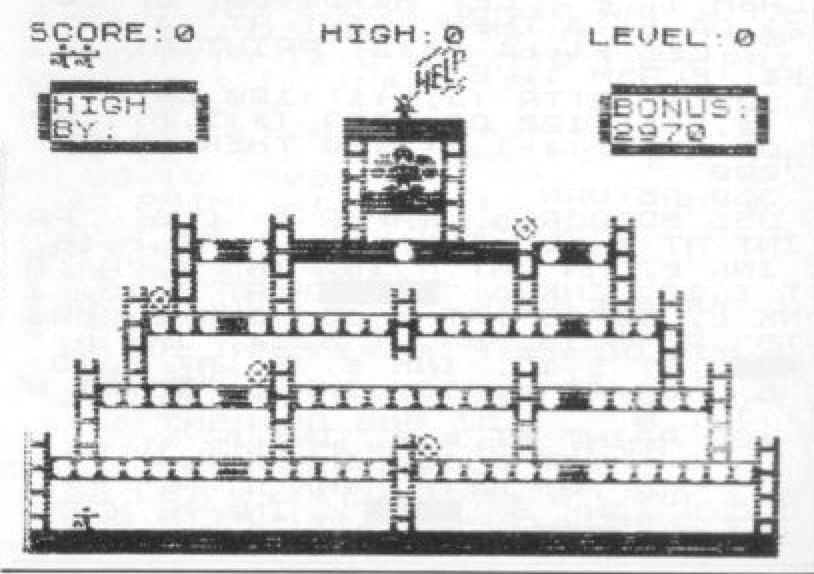


```
";AT 12,e;"        CCC CCCCCC CCCC
CC CCC        ";AT 15,e;"   CCCCC
C CCCCCCCCC C CCCCC    ";AT 18,t
;"CCCCCCC CCCCCC CCCCCC CCCCCCC"
 460 PRINT AT 15,t; INK S;" ";AT
 15,29;" ";AT 12,n;" ";AT 12,27;
" ";AT ni,9;" ";AT ni,25;" ";AT
r,24; INK r;"██████";AT g,24;"██
████";AT n,23;"█";AT n,30;"█";AT
 f,23;"█";AT f,30;"█";AT e,e; IN
K S;"SCORE:";AT e,12;"HIGH:";AT
e,23;"LEVEL:";AT n,24;"BONUS:"
 465 PRINT AT r,t; INK m;"██████
";AT g,t;"██████";AT n,e;"█";AT
f,e;"█";AT n,S;"█";AT f,S;"█";AT
 n,t; INK e;"HIGH";AT f,t;"BY:";
 INK r;H$
 470 FOR x=t TO li-t: PRINT AT t
,x;"F": NEXT x
 510 PRINT AT 21,e; INK n;"█████
███████████████████████": LET
 y=8: FOR x=m TO e STEP -r: GO S
UB A: NEXT x: LET y=8: FOR x=24
TO 30 STEP r: GO SUB A: NEXT x
 540 LET x=10: LET y=8: GO SUB A
: LET x=20: LET y=8: GO SUB A: L
ET x=15: LET y=11: GO SUB A: LET
 x=10: LET y=14: GO SUB A: LET x
=20: LET y=14: GO SUB A: LET x=1
5: LET y=17: GO SUB A
 550 LET x=8: FOR d=t TO r: FOR
y=ni TO 18 STEP n: PRINT AT y,x;
 INK m; BRIGHT t;"█": NEXT y: LE
T x=22: NEXT d: GO TO 18
 600 FOR y=y TO y+n: PRINT AT y,
x; INK t;"B": NEXT y: LET y=y-t:
 RETURN
7005 FOR x=f TO VAL "-16" STEP -
t: PRINT AT a-t,b;" ": PRINT AT
a,b;"H": IF ATTR (a+t,b)<>q AND
ATTR (a+t,b)<>VAL "47" THEN GO T
O VAL "7015"
7010 LET a=a+t: BEEP VAL ".01",x
: PRINT AT ni,VAL "11"; INK S;"█
██C"; INK n;"C"; INK S;"████";AT
 VAL "8",VAL "13"; INK e;"B";AT
VAL "8",VAL "17";"B";AT S,VAL "1
3";"B";AT S,VAL "17";"B": NEXT x
7015 PRINT AT m,VAL "14";" ";AT
m,VAL "16";" ";AT g,VAL "14"; IN
K e;"D";AT g,VAL "16";"U"
7020 PAPER g: INK e: FOR x=VAL "
20" TO -R STEP -f: PRINT AT a,b;
 FLASH t;"X": PRINT AT a,b;"H":
BEEP VAL ".01",x+t: PRINT AT a,b
;"@": PRINT AT a,b;" ": BEEP VAL
 ".01",x: NEXT x
```

74

73

```
7030 FOR x=t TO VAL "150": PRINT
 AT a,b; INK r;"@": NEXT x: LET
li=li-1: IF li>e THEN GO TO VAL
"3"
7032 PRINT AT VAL "12",VAL "11";
"GAME OVER": INPUT INK e;"HIT <E
NTER> TO PLAY AGAIN...";K$: IF s
c>hi THEN LET hi=sc: GO TO VAL "
7050"
7035 GO TO r
7050 CLS : PRINT AT VAL "8",VAL
"6";"CONGRATULATIONS-YOU ARE";AT
 VAL "10",f;"TODAY'S HIGH SCORER
! PLEASE";AT VAL "12",f;"ENTER Y
OUR NAME (3 LETTERS)";: FOR x=t
TO VAL "30": BEEP VAL ".1",RND*V
AL "40": NEXT x: INPUT H$: LET H
$=H$(1 TO 3): GO TO r
7110 BORDER 4: PAPER 4: CLS : PR
INT AT 8,15; INK 2;"KL";AT 9,15;
"MN";AT 10,14; INK 6;"A";AT 11,1
4; INK 0;"DPQ";AT 12,14;" ST";AT
 6,13;"KRAZY";AT 14,13;"KONG!":
PRINT #1;"      HOW HIGH CAN YOU
TRY?   "
7130 BEEP .4,-5: PAUSE 3: BEEP .
2,-3: BEEP .3,-3: PAUSE 3: BEEP
.2,-3: PAUSE 2: BEEP .2,0: PAUSE
 2: BEEP .3,-3: PAUSE 4: BEEP 1,
3
7140 PAUSE 250: GO TO 4
7302 PRINT AT a,b; PAPER g;" "
7305 FOR y=t TO 16: PRINT AT y,8
;"              ": NEXT y: FOR
y=17 TO 20: PRINT AT y,ni; INK n
;"CCCCCCCCCCCC": NEXT y
7310 LET y=5: LET x=15: PRINT AT
 y,x-t;"OPQ";AT y+t,x-t;"RST"
7315 FOR s=t TO VAL "10": PRINT
AT y+t,x+t;" ";AT y+t,x-t;" ";AT
 y,x+t;"U";AT y,x-t;"D": BEEP VA
L ".08",s: PRINT AT y,x+t;"Q";AT
 y,x-t;"O";AT y+t,x+t;"T";AT y+t
,x-t;"R": BEEP VAL ".1",s-VAL "1
0": NEXT s
7320 FOR s=t TO VAL "11": PRINT
AT y,x-t;"DPU";AT y+t,x-t;"DSU":
 LET y=y+t: PRINT AT y-r,x-t;"
 ": BEEP VAL ".2",-s: NEXT s: BE
EP t,VAL "-15"
7330 PRINT AT ni,8; INK n;"[redacted]";AT 8,15; INK 7;"A":
LET a=8: FOR b=8 TO 14: PRINT AT
 a,b;"F": PRINT AT a,b-1;" ": GO
 SUB 12: NEXT b
7340 PAUSE 150: PRINT AT 13,12;"
YOU WIN": PAUSE 100: PRINT AT 13
,11;"THIS TIME": PAUSE 100: PRIN
T AT 13,8; FLASH t;"NOW TRY AGAI
N.."
7350 PAUSE 500: LET sc=sc+bo: LE
T le=le+t: GO TO n
7820 IF b>27 THEN RETURN
7825 IF ATTR (a+t,b)=w THEN PRIN
T AT a+t,b; INK S;" ": LET p=p+t
: LET sc=sc+100
7830 BEEP .1,15: LET a=a-t: LET
b=b+t: PRINT AT a+t,b-t;" ": PRI
NT AT a,b; INK e;"I": BEEP .1,20
: IF ATTR (a+r,b)=w THEN PRINT A
T a+r,b; INK S;" ": LET p=p+t: L
ET sc=sc+100
7835 IF ATTR (a,b-t)=o OR ATTR (
a+r,b-t)=o THEN PRINT AT a+t,b-t
; INK t;"B"
7840 LET b=b+t: PRINT AT a,b-t;"
 ": PRINT AT a,b; INK e;"I": BEE
P .1,25: IF ATTR (a+r,b)=w THEN
PRINT AT a+r,b; INK S;" ": LET p
=p+t: LET sc=sc+100
7845 IF ATTR (a+t,b-t)=o AND ATT
R (a+r,b-t)<>o THEN PRINT AT a,b
-t; INK t;"B"
7850 LET a=a+t: LET b=b+t: PRINT
 AT a-t,b-t;" ": PRINT AT a,b; I
NK e;"F": BEEP .1,15
7855 IF ATTR (a,b-t)=o AND ATTR
(a+r,b-t)<>o THEN PRINT AT a-t,b
-t; INK t;"B"
7858 IF b=b1 AND a=f1 OR b=b2 AN
D a=f2 OR b=b3 AND a=f3 OR b=b4
AND a=f4 THEN GO TO 7000
7860 IF a=14 AND b>28 OR a=11 AN
D b>26 OR a=8 AND b>24 THEN GO T
O 7000
7890 GO TO 20
7910 IF b<n THEN RETURN
7915 IF ATTR (a+t,b)=w THEN PRIN
T AT a+t,b; INK S;" ": LET p=p+t
: LET sc=sc+100
7930 BEEP .1,15: LET a=a-t: LET
b=b-t: PRINT AT a+t,b+t;" ": PRI
NT AT a,b; INK e;"J": BEEP .1,20
: IF ATTR (a+r,b)=w THEN PRINT A
T a+r,b; INK S;" ": LET p=p+t: L
ET sc=sc+100
7935 IF ATTR (a,b+t)=o OR ATTR (
a+r,b+t)=o THEN PRINT AT a+t,b+t
; INK t;"B"
7940 LET b=b-t: PRINT AT a,b+t;"
 ": PRINT AT a,b; INK e;"J": BEE
P .1,25: IF ATTR (a+r,b)=w THEN
PRINT AT a+r,b; INK S;" ": LET p
=p+t: LET sc=sc+100
7945 IF ATTR (a+t,b+t)=o AND ATT
R (a+r,b+t)<>o THEN PRINT AT a,b
+t; INK t;"B"
7950 LET a=a+t: LET b=b-t: PRINT
 AT a-t,b+t;" ": PRINT AT a,b; I
NK e;"G": BEEP .1,15
7955 IF ATTR (a,b+t)=o AND ATTR
(a+r,b+t)<>o THEN PRINT AT a-t,b
+t; INK t;"B"
7958 IF b=b1 AND a=f1 OR b=b2 AN
D a=f2 OR b=b3 AND a=f3 OR b=b4
AND a=f4 THEN GO TO 7000
7960 IF a=14 AND b<r OR a=11 AND
 b<f OR a=8 AND b<m THEN GO TO 7
000
7990 GO TO 20
8500 PAPER VAL "2": BORDER PI-PI
: INK VAL "7": CLS
8510 PRINT AT PI/PI,VAL "10";"KR
AZY KONG";AT VAL "2",VAL "10";"[redacted]";AT INT PI,INT PI;" by
 TIM BOONE,Southampton"
8550 PRINT AT VAL "5",VAL "7";"K
EYBOARD COMMANDS:";AT VAL "7",PI
-PI;"CURSOR KEYS GIVE WALK DIREC
TION";AT VAL "9",VAL "8";"1 = JU
MP LEFT";AT VAL "11",VAL "8";"0
= JUMP RIGHT"
8552 PRINT AT 15,0;"YOU SCORE 10
0 FOR EACH PLUG YOU KNOCK OUT,
AND WIN THE BONUS IFYOU CONQUER
KONG.";AT 21,3; BRIGHT 1;"PRESS
ANY KEY TO PLAY...": IF INKEY$="
" THEN INK 0: GO TO VAL "8552"
8560 INK 0: RETURN
8600 STOP
```







Can you get Willie Worm into the safety of his hole before hissing Sid Snake catches him and invites him to join him for lunch. Willie is on the menu! Willie has to get back to his hole using a series of ladders – but slippery Sid can do without these and pursues the weary worm at a frighteningly fast speed.

In dire emergencies Willie can call on his amazing ability to teleport out of harms way. But the number of times he can use this talent is limited – so they must be used with care.

Can you keep the snake from the worm's door? Or is Willie doomed?

Full instructions are included in the program. So worm your way out of this one if you can!



WORM CHASE

```
10 REM WORM CHASE
20 REM BY STEVEN MURDIE
30 REM FOR DRAGON 32
40 REM ALL REMS CAN BE DELETED
50 REM SET UP GRAPHICS ARRAYS
60 DIMA(20,20):DIM L(20,20)
70 REM INSTRUCTIONS
80 CLS:PRINT"*WILLY WORM MEETS SID SNAKE*"
90 PRINT"SID SNAKE WANTS TO EAT WILLY    WORM.
YOU MUST PROTECT WILLY BY  GUIDING
HIS MOVES USING '0' &   'O' FOR UP & DOWN AND
'1' & '3' FOR LEFT & RIGHT"
100 PRINT"WILLY CAN TELEPORT WITH THE 'T' KEY"
110 PRINT"..BUT HE CAN ONLY TELEPORT 5   TIMES"
120 PRINT"WILLY MUST USE THE LADDERS,SID  DOESN'T HAVE TO"
130 PRINT"WILLY CAN WIN IF HE REACHES HIS HOLE...BUT IF
SID WINS........"
140 PRINT"HIT ANY KEY TO START"
150 REM ORANGE SCREEN
160 SCREEN0,1
170 IF INKEY$=""THEN 170
180 CLS4
190 REM SNAKES POSITION
200 A=0:B=30
210 REM YOUR POSITION
220 X=0:Y=140
230 PMODE3,1:PCLS
240 REM DRAW YOU
250 LINE(95,95)-(105,105),PSET,BF
260 GET(90,90)-(110,110),A,G
270 REM RESET SCORE TO ZERO
280 SCORE=0
290 PMODE3,1:PCLS
300 REM DRAW LADDER
310 LINE(0,0)-(0,20),PSET:LINE(20,0)-(20,20),PSET
320 FORT=5TO15 STEP 5
330 LINE(0,T)-(20,T),PSET
340 NEXTT
350 GET(0,0)-(20,20),L,G
360 PMODE3,1:COLOR2,1:PCLS:SCREEN1,0
370 REM SET UP PLAY FIELD
380 FORT=0TO190 STEP 40
390 LINE(0,T)-(255,T+20),PSET,BF
400 NEXTT
410 FORT=20 TO 170 STEP 40
420 PUT(150,T)-(170,T+20),L,OR
430 NEXTT
440 REM DRAW HOLE
450 CIRCLE(5,110),5,3
460 PAINT(5,110),3,3
470 PUT(X,Y)-(X+20,Y+20),A,OR
480 LINE(0,30)-(0,30),PSET
490 COLOR3,1
500 REM-SETS KEYS TO UPPERCASE
510 POKE329,255
520 A$=INKEY$
530 IF A$="1" AND X>0 THEN X=X-10
540 IF A$="3" AND X<200 THEN X=X+10
550 IF A$="0" AND X<=170 AND X=>150 THEN Y=Y-10:SOUND200,1
560 IF A$="O" AND X<=170 AND X=>150 AND Y<170
THEN Y=Y+10:SOUND50,1
570 IF INKEY$="T" AND TE<5 THEN X=RND(20)*10:
Y=RND(17)*10:TE=TE+1:PLAY"T12V31O3;
1;2;3;4;5;6;7;8;9;10;11;12"
580 REM CHECK TO SEE IF YOU'VE  WON
590 IF   X=0 AND Y=100 THEN PLAY"T12O2V31;1;3;4;5;
1;3;4;5;1;3;4;5;3;1;3;1":SCORE
=SCORE+1500:CLS2:GOTO730
600 IFY<0 THEN Y=0
610 REM DRAW SNAKE
620 CIRCLE(A,B),5,3:PAINT(A,B),2,3
630 REM MOVE SNAKE
640 IF Y<B THEN B=B-5
650 IF Y>B THEN B=B+5
660 IF X>A THEN A=A+5
670 IF Y=B AND X<A THEN A=A-5
680 REM INCREMEMT SCORE
690 SCORE=SCORE+10
700 REM CHECK TO SEE IF YOU ARE CAUGHT.IF
YOU ARE PLAY DEATH     MARCH
710 IF X=A AND Y=B THEN PLAY"O1V31T2L4GGL8GGL4B-AAGGF+G"
:CLS0:GOTO730
720 GOTO470
730 PRINT"YOU SCORED "SCORE" POINTS."
740 IF SCORE>HI THEN HI=SCORE
750 REM INCREASES HI-SCORE IF   SCORE IS BIGGER THAN IT
760 PRINT"HI-SCORE="HI
770 PRINT"ANOTHER GAME"
780 REM SETS KEYS TO UPPERCASE
790 POKE329,255
800 A$=INKEY$
810 IF A$="Y" THEN TE=0:GOTO 80
820 IF A$="N" THEN END
830 GOTO800
```



SPECTRUM

BY M. BEATON

IN 16K

Baffled, bothered, bewildered? Then you must be trapped in the 3D Labyrinth. Even more puzzling than the Hampton Court maze, more difficult to get out of than the Barbican centre and more addictive than Dallas, this game has everything – except clues on how to escape!

At the start of the game you are asked to select the size of the maze. It is always organised so that one exit is at the top left on the map which you can call up for advice. You start at the bottom right.

Screen presentation is simple but effective. The maze is always displayed from the back of the cell you are in – and you can see up to a maximum of four cells in front. You'll soon get the hang of the graphic display and be ready to tackle the mysteries of the maze.

Commands used are; F = forward one cell. R = right 90 degrees, staying in the same cell. L = left 90 degrees etc. H = Help! Returns you to the map of the maze showing your position.

3D LABYRINTH

```
   5 FLASH 0: BRIGHT 0: OVER 0:
INVERSE 0: BORDER 6: PAPER 2: IN
K 0: CLS : PRINT AT 7,7;"3-D LAB
YRINTH";AT 9,10;"1982 - M.BEATON
"
   7 FOR i=0 TO 7: POKE USR "a"+
i,2↑i: POKE USR "b"+i,2↑(7-i): P
OKE USR "c"+i,1: POKE USR "d"+i,
128: POKE USR "e"+i,0. POKE USR
"f"+i,15: POKE USR "g"+i,252: PO
KE USR "h"+i,0: POKE USR "i"+i,6
3: POKE USR "j"+i,240: POKE USR
"k"+i,129: POKE USR "l"+i,243: P
OKE USR "m"+i,207: NEXT i
  10 POKE USR "e"+7,255: POKE US
R "f"+7,255: POKE USR "h",255: P
OKE USR "j"+7,255: POKE USR "k",
126: POKE USR "k"+7,126
  15 DIM m(11,16): DIM a(4): DIM
 i$(1): LET b$="[redacted]"
: LET c$="                  "
  20 INPUT "Length(2-16)?",u: LE
T u=INT u: IF u<2 OR u>16 THEN G
O TO 20
  40 INPUT "Width(2-11)?",t: LET
 t=INT t: IF t<2 OR t>11 THEN GO
 TO 40
  50 CLS : PRINT AT 8,1;"PLEASE
WAIT WHILE I CREATE THE";TAB 11;
"LABYRINTH"
 110 RANDOMIZE : LET x=INT (t/2)
: LET y=INT (u/2): LET m(x,y)=5
 120 LET b=0: IF x<t THEN IF m(x
+1,y)=0 THEN LET b=b+1: LET a(b)
=1
 140 IF x>1 THEN IF m(x-1,y)=0 T
HEN LET b=b+1: LET a(b)=2
 150 IF y<u THEN IF m(x,y+1)=0 T
HEN LET b=b+1: LET a(b)=3
 160 IF y>1 THEN IF m(x,y-1)=0 T
HEN LET b=b+1: LET a(b)=4
 180 IF b<>0 THEN GO TO 230
 190 LET b=m(x,y): GO SUB 2000:
LET x1=-x1: LET y1=-y1
 200 IF x1=0 AND y1=0 THEN GO TO
 340
 210 LET x=x+x1: LET y=y+y1: GO
TO 120
 230 LET b=a(INT (RND*b)+1): GO
SUB 2000
 260 LET x=x+x1: LET y=y+y1: LET
 m(x,y)=b: GO TO 120
 340 LET l=t+1: LET m=u+1: LET x
=t: LET y=u: LET x2=-1: LET y2=0
: BORDER 1: PAPER 4: CLS : GO SU
B 4000
 350 PRINT AT 1,11;"GOOD LUCK!";
AT 18,10;"PRESS ANY KEY": PAUSE
0
 370 CLS : INK 1: FOR i=0 TO 21:
 PRINT AT i,31;"█": NEXT i: INK
0
 400 IF x2=0 THEN GO TO 750
 405 LET q=x+x2*3: LET v=y+x2: L
ET z=y-x2
 410 FOR i=x TO q STEP x2: LET s
=4-(i-x)*x2: GO SUB 3100
 420 LET w=i+x2
 430 LET b=m(i,y): GO SUB 2000:
IF y1=-x2 THEN LET a=1
 440 IF v>0 AND v<m THEN LET b=m
(i,v): GO SUB 2000: IF y1=x2 THE
N LET a=1
 490 GO SUB 2100: IF a=0 THEN GO
 SUB 2700: GO TO 530
 495 LET a=0: IF w>0 AND w<l AND
 v>0 AND v<m THEN LET b=m(w,v):
GO SUB 2000: IF x1=x2 THEN LET a
=1
 496 IF v>0 AND v<m THEN LET b=m
(i,v): GO SUB 2000: IF x1=-x2 TH
EN LET a=1
 497 IF a=1 OR (i=1 AND y=2 AND
x2=-1) THEN GO TO 515
 500 GO SUB 2300: GO TO 530
 515 GO SUB 2500
 530 LET a=0: LET b=m(i,y): GO S
UB 2000: IF y1=x2 THEN LET a=1
 550 IF z>0 AND z<m THEN LET b=m
(i,z): GO SUB 2000: IF y1=-x2 TH
EN LET a=1
 560 GO SUB 2200
 610 IF a=0 THEN GO SUB 2800: GO
 TO 700
 620 LET a=0: IF w>0 AND w<l AND
 z>0 AND z<m THEN LET b=m(w,z).
GO SUB 2000: IF x1=x2 THEN LET a
=1
 640 IF z>0 AND z<m THEN LET b=m
(i,z): GO SUB 2000: IF x1=-x2 TH
EN LET a=1
 650 IF a=1 THEN GO TO 680
 660 GO SUB 2400. GO TO 700
 680 GO SUB 2600
 700 GO SUB 3000
 705 LET a=0: IF w>0 AND w<l THE
N LET b=m(w,y): GO SUB 2000: IF
x1=x2 THEN LET a=1
 710 LET b=m(i,y): GO SUB 2000:
IF x1=-x2 THEN LET a=1
 720 IF w>0 AND w<l AND a=1 THEN
 NEXT i
 730 IF (x2=1 AND i<=q) OR (x2=-
1 AND i>=q) AND (i<>1 OR y<>1) T
HEN GO SUB 2900
 740 GO TO 1101
 750 LET q=y+y2*3: LET v=x-y2: L
ET z=x+y2
 760 FOR i=y TO q STEP y2: LET s
=4-(i-y)*y2: GO SUB 3100
 770 LET w=i+y2
 800 LET b=m(x,i): GO SUB 2000:
IF x1=y2 OR (y2=1 AND x=1 AND i=
1) THEN LET a=1
 810 IF v>0 AND v<l THEN LET b=m
(v,i): GO SUB 2000: IF x1=-y2 TH
EN LET a=1
 830 GO SUB 2100: IF a=0 THEN GO
 SUB 2700: GO TO 930
 850 LET a=0: IF w>0 AND w<m AND
 v>0 AND v<l THEN LET b=m(v,w):
GO SUB 2000: IF y1=y2 THEN LET a
=1
 860 IF v>0 AND v<l THEN LET b=m
```

```
(v,i): GO SUB 2000: IF y1=-y2 TH
EN LET a=1
 870 IF a=1 THEN GO TO 900
 880 GO SUB 2300: GO TO 930
 900 GO SUB 2500
 930 LET a=0: LET b=m(x,i): GO S
UB 2000: IF x1=-y2 OR (y2=-1 AND
 x=1 AND i=1) THEN LET a=1
 950 IF z>0 AND z<l THEN LET b=m
(z,i): GO SUB 2000: IF x1=y2 THE
N LET a=1
 960 GO SUB 2200
 970 IF a=0 THEN GO SUB 2800: GO
 TO 1060
 980 LET a=0: IF w>0 AND w<m AND
 z>0 AND z<l THEN LET b=m(z,w):
GO SUB 2000: IF y1=y2 THEN LET a
=1
1000 IF z>0 AND z<l THEN LET b=m
(z,i): GO SUB 2000: IF y1=-y2 TH
EN LET a=1
1010 IF a=1 THEN GO TO 1040
1020 GO SUB 2400: GO TO 1060
1040 GO SUB 2600
1060 GO SUB 3000
1070 LET a=0: IF w>0 AND w<m THE
N LET b=m(x,w): GO SUB 2000: IF
y1=y2 THEN LET a=1
1080 LET b=m(x,i): GO SUB 2000:
IF y1=-y2 THEN LET a=1
1090 IF w>0 AND w<m AND a=1 THEN
 NEXT i
1100 IF (y2=1 AND i<=q) OR (y2=-
1 AND i>=q) THEN GO SUB 2900
1101 IF x<>1 OR y<>1 THEN GO TO
1107
1102 IF x2=-1 THEN PRINT AT 0,13
;"█_█";AT 1,12;" |EXIT| ";AT 2,13
;"
1103 IF y2=-1 THEN PRINT AT 5,26
;"OUT>"
1107 IF x=t AND y=u THEN PRINT A
T 7,5;"YOU ARE AT THE START"
1110 RESTORE : FOR i=1 TO 4: REA
D x1,y1: IF x1=x2 AND y1=y2 THEN
 GO TO 1130
1120 NEXT i
1130 INPUT "What is your move ?"
;i$: GO TO 1140
1135 INPUT "Left,Right,Forward o
r Help?";i$
1140 IF i$="r" OR i$="R" THEN LE
T i=i+1: GO TO 1190
1150 IF i$="l" OR i$="L" THEN LE
T i=i-1: GO TO 1190
1160 IF i$="h" OR i$="H" THEN GO
 SUB 4000: GO TO 1130
1170 IF i$="f" OR i$="F" THEN GO
 TO 1320
1180 GO TO 1135
1190 IF i=5 THEN LET i=1
1200 IF i=0 THEN LET i=4
1300 RESTORE : FOR i=1 TO i: REA
D x2,y2: NEXT i
1310 GO TO 370
1320 LET x=x+x2: LET y=y+y2
1330 IF x<1 AND y=1 THEN GO TO 6
000
1340 IF x<1 OR x>t OR y<1 OR y>u
 THEN GO TO 1430
1350 LET a=0
1360 IF y2=0 THEN GO TO 1400
1370 LET b=m(x,y): GO SUB 2000:
IF y1=y2 THEN LET a=1
1380 LET b=m(x,y-y2): GO SUB 200
0: IF y1=-y2 THEN LET a=1
1390 GO TO 1420
1400 LET b=m(x,y): GO SUB 2000:
IF x1=x2 THEN LET a=1
1410 LET b=m(x-x2,y): GO SUB 200
0: IF x1=-x2 THEN LET a=1
1420 IF a=1 THEN GO TO 370
1430 LET x=x-x2: LET y=y-y2
1440 PRINT AT 7,4;"YOU CAN'T MOV
E THIS WAY"
1450 GO TO 1130
2000 LET x1=0: LET y1=0
2005 IF b=1 THEN LET x1=1
2010 IF b=2 THEN LET x1=-1
2020 IF b=3 THEN LET y1=1
2030 IF b=4 THEN LET y1=-1
2040 RETURN
2100 FOR j=c TO d
2110 PRINT AT 21-j,j;"/": IF a=0
 AND j-9>-1 THEN PRINT AT j-9,j;
"\"
2120 NEXT j: RETURN
2200 FOR j=c TO d
2210 PRINT AT 21-j,30-j;"\": IF
a=0 AND j-9>-1 THEN PRINT AT j-9
,30-j;"/"
2220 NEXT j: RETURN
2300 LET n=d-c: FOR k=e TO f: PR
INT AT k,c;b$( TO n);"█": NEXT k
: RETURN
2400 LET n=30-d: LET p=d-c: FOR
k=e TO f: PRINT AT k,n;"█";b$( T
O p): NEXT k: RETURN
2500 PRINT AT f,c;"________________█"(8-d
+c TO ): FOR j=e TO f-1: PRINT A
T j,d;"█": NEXT j
2510 IF d-c>0 THEN LET j=20-((d-
c)/2+d)-1: LET n=d-c: FOR k=11-j
 TO j: PRINT AT k,c;b$( TO n);"█
": NEXT k
2520 RETURN
2600 LET p=30-d: PRINT AT f,p;"█
________________"( TO d-c+1): FOR j=e TO
f-1: PRINT AT j,p;"█": NEXT j
2610 IF d-c>0 THEN LET j=20-((d-
c)/2+d)-1: LET n=d-c: FOR k=11-j
 TO j: PRINT AT k,p;"█";b$( TO n
): NEXT k
2620 RETURN
2700 FOR j=e TO f: PRINT AT j,d;
" |": NEXT j: RETURN
2800 LET r=30-d: FOR j=e TO f: P
RINT AT j,r;"| ": NEXT j: RETURN
2900 LET n=d+1: LET p=29-d*2: FO
R k=e TO f: PRINT AT k,n;b$( TO
p): NEXT k: RETURN
3000 PRINT AT f+1,d+1;c$( TO 29-
d*2): RETURN
3100 LET a=0: LET c=16-2↑s: LET
d=16-2↑(s-1)-1
3110 LET f=20-d: LET e=0: IF d-8
>-1 THEN LET e=d-8
3120 RETURN
4000 CLS : LET r=9-INT (t/2): LE
T p=15-INT (u/2)
4005 FOR k=1+r TO t+r: PRINT AT
k,p;" |";AT k,u+1+p;"| ": NEXT k:
FOR k=1+p TO u+p: PRINT AT r,k;"
_";AT t+1+r,k;"‾": NEXT k
4010 OVER 1: FOR k=1 TO t: FOR j
=1 TO u
4020 LET b=m(k,j): GO SUB 2000
4025 LET g=k+r: LET h=j+p
4027 PRINT AT g,h;"□"
4030 IF x1=1 THEN PRINT AT g,h;"
‾";AT g-1,h;"_"
4040 IF x1=-1 THEN PRINT AT g,h;
"_";AT g+1,h;"‾"
4050 IF y1=1 THEN PRINT AT g,h;"
| ";AT g,h-1;" |"
4060 IF y1=-1 THEN PRINT AT g,h;
" |";AT g,h+1;"| "
4070 NEXT j: NEXT k
4090 IF x2=1 THEN LET i$="v"
4100 IF x2=-1 THEN LET i$="↑"
4110 IF y2=1 THEN LET i$=">"
4120 IF y2=-1 THEN LET i$="<"
4130 PRINT FLASH 1;AT x+r,y+p;i$
; FLASH 0;AT 1+r,1+p;" ": OVER 0
: PRINT AT r,1+p;" "
4140 RETURN
5000 DATA 1,0,0,-1,-1,0,0,1
6000 BORDER 3: PAPER 5: CLS : PR
INT AT 7,3;"YOU HAVE ESCAPED FRO
M THE";TAB 11;"LABYRINTH": FOR i
=1 TO 400: NEXT i: RUN
```



BY G. BECK

Remember City Bomb – the game that featured in a very early issue of Computer and Video Games? Well it's back – bigger and better and for the Dragon 32.

You control a plane steadily losing height above a skyscraper city. The only way you will be able to land safely is to clear a landing strip by bombing the buildings flat! If you manage to land safely the city is rebuilt with taller buildings presenting you with a tougher challenge.

It's a very addictive version of this classic game, making good use of sound and colour graphics. Full instructions are included in the program.

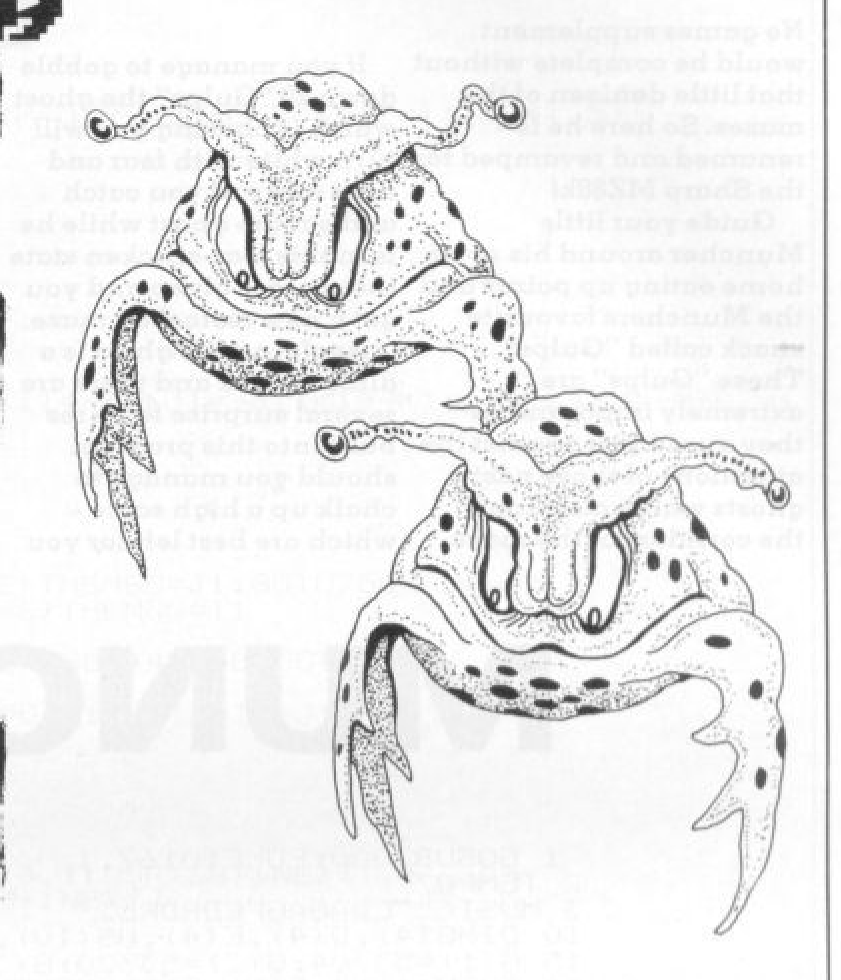


BOMBER ATTACK

```
10 '££££££££££££££££
20 '£   BOMBER    £
30 '£   ATTACK    £
40 '£  BY G.BECK  £
50 '£  16 /1/ 83  £
60 '££££££££££££££££
70 POKE65495,0
80 DIMB(15,7),X(7,7)
90 SC=0:HI=HI:CLS:INPUT"DIFFICULTY (1-10)";A
100 IFA>10 OR A<0 THEN90
110 PMODE3,1:SCREEN1,0:PCLS
120 PCLS3
130 '**DRAW PLANE & BUILDING BLUCK**
140 COLOR2,1:DRAW"BM10,10;BR1R2F2R5F1R3F1R1L12H1U3"
150 PAINT(14,13),2,2
160 N=9:M=9:N1=24:M1=16
170 GET(N,M)-(N1,M1),B,G
180 COLOR4,1:DRAW"BM50,50;R7D7L7U7"
190 PAINT(53,53),4,4
200 COLOR2,1:DRAW"BM52,52;R3D3L3U3F1"
210 GET(50,50)-(57,57),X,G
220 PCLS3
230 '**SET UP BUILDINGS**
240 FORI=15TO235STEP7
250 Q=RND(A*10):Z=7*(INT(Q/7))
260 FORT=191 TO191-Z STEP-7
270 PUT(I,T-7)-(I+7,T),X,PSET
280 NEXTT
290 NEXTI
300 N=0:N1=15:M=1:M1=7
310 '**MOVEMENT OF PLANE**
320 COLOR3,1:LINE(N,M)-(N+7,M+7),PSET,BF
330 N=N+7:M=M:N1=N1+7:M1=M1:Q=N+4:Q1=M1+1:IFN1>252
THENN=0:N1=15:M=M+7:M1=M1+7:Q
=N+3:Q1=Q1+7
340 IF M1>190  THENGOTO810
350 IFN=0THEN420
360 IFPPOINT(N1+1,M1)<>3 THENGOTO440
370 PUT(N,M)-(N1,M1),B,PSET
380 PLAY"T25502BC"
390 FORK=1TO75:NEXTK
400 IFINKEY$<>""THEN PLAY"T25503AB":  GOSUB580
410 GOTO320
420 LINE(240,M-7)-(255,M1-7),PSET,BF:GOTO330
430 '**CRASH**
440 FORT=1TO100
450 X=RND(3)+1
460 COLORX,1:LINE(N1,M1)-(RND(255),RND(190)),PSET
470 PLAY"T25505B01C"
480 NEXTT
490 CLS:PRINT"HARD LUCK YOU CRASHED"
500 PLAY"T402L4DL8DDL4DL6FL8EEDDC£L2D"
510 PRINT"YOU MANAGED TO SCORE";SC;"POINTS"
520 IF SC>HI THEN HI=SC
530 PRINT"HIGH-SCORE";HI;"POINTS"
540 PRINT"ANOTHER GO (Y/N)"
550 B$=INKEY$:IFB$=""THEN550
560 IFB$<>"N"THEN GOTO90:ELSE POKE65494,0:END
570 '**DROPPING OF BOMB & CONTINUED
MOVEMENT OF PLANE**
580 PSET(Q,Q1,3):Q=Q:Q1=Q1+7:IFQ1>190
THENQ=N+7:Q1=M1+1:RETURN ELSEIFPPOINT(Q,Q1
)<>3THENQ=Q:Q1=Q1:GOTO670 ELSE PSET(Q,Q1,2)
590 COLOR3,1:LINE(N,M)-(N+7,M+7),PSET,BF
600 N=N+7:N1=N1+7:IFN1>252 THENN=0:N1=15:M=M+7:
M1=M1+7:IFN=0THEN660
610 IFPPOINT(N1+1,M1)<>3THEN GOTO440
620 PUT(N,M)-(N1,M1),B,PSET
630 PLAY"T25504B01G"
640 FORK=1TO50:NEXTK
650 GOTO580
660 LINE(240,M-7)-(255,M1-7),PSET,BF:GOTO600
670 P=RND(A)*7:FORT=1TOP
680 T1=Q1:Q1=Q1+T:IFQ1>190 THENQ1=190
690 COLOR3,1:LINE(Q-3,T1-7)-(Q+3,Q1),PSET,BF:SC=SC+10
700 IFQ1>180 THENRETURN
710 COLOR3,1:LINE(N,M)-(N+7,M+7),PSET,BF
720 N=N+7:M=M:N1=N1+7:M1=M1:IFN1>252 THENN=0:
N1=15:M=M+7:M1=M1+7
730 IFPPOINT(N1+1,M1)<>3THENGOTO440
740 IFN=0THEN800
750 PUT(N,M)-(N1,M1),B,PSET
760 PLAY"T25501BG"
770 FORK=1TO50:NEXTK
780 NEXTT
790 RETURN
800 LINE(240,M-7)-(255,M1-7),PSET,BF:GOTO720
810 CLS:PRINT"CONGRATULATIONS YOU MANAGED TO  LAND"
820 PRINT"ITS GOING TO GET HARDER NOW"
830 PLAY"T1003BAGBGGABCGGBAG"
840 SC=SC+RND(100)
850 A=A+1:GOTO110
```



BY MARKUS JACOBSON



It was just one of those days. Nothing about it on the breakfast-time weather bulletins of course, but I looked up at midday and the skies were black with alien postmen all ready to deliver.

Well it looked as though some huge galactic sorting office in the sky had only just discovered Earth and we had several eons of backpost as yet undelivered – and they were about to put things right.

Laser bases are of little use when the skies are full of cartons from mail-order firms.

Luckily a new idea, just shown on *Tomorrow's World*, for a mobile black hole which can cope with three on any well-known breakfast cereal, looks like coming to mankind's rescue.

In this game for the Atom you must thwart their plans and prevent the boxes from landing. If you fail to do so they will gradually grow into piles until one reaches the top of the screen. Once you allow this to happen you might as well pack up and go home for the game is over.

Your only means of defence is a mobile Black Hole that will eat anything. This is moved from left to right by means of the Shift and Repeat keys. Should you collide with a Box side or hit a Pile, your hole is moved upwards thereby limiting your ability to stop the falling Boxes.

For those who like experimenting, the sound effects can be altered by poking different values into #81.

GROW

```
 1REM MARKUS JAKOBSSON
 2REM ]LSTORP 5:57
 3REM S-24021 L\DDEK\PINGE
 4REM SWEDEN
 5P.$12"                    GROW"'''"LEFT  -
 SHIFT"'"RIGHT - REPT"'''
 7IN."LEVEL 1-5"U;IFU>5ORU<1;
 P.$11;LI.#FE22;G.7
 9U=5-U
 10DIMRR4,P-1;L=#B002;P.$21;[
 20:RR0 LDAL;LDY#81
 30:RR1 LDX#80
 40:RR2 DEX;BNERR2
 50EOR@4;STAL;DEY;BNERR1;RTS;];P.$6
 60Q=0
 70P.$12;F.I=0TO31;I?#81E0=#FF;N.;
 A=15;B=12;C=0;O=0
 80F=A.R.%32;G=A.R.%200;G=-G;N=A.R.%90+G+30
 90?#E1=0;P."          0"Q
200GOS.a;C=C-1;GOS.d
202IFU=5;G.210
204F.I=1TOU;WAIT;N.
210F.I=1TOU;GOS.a;N.
290G.200
300aD?#8000=32;D?#8001=32
305IF?#B001&#80=0;GOS.b
310IF?#B002&#40=0;GOS.c
315D=A+(B*32);D?#8000=76;D?#8001=76
320R.
330bD=A-1+(B*32);IFD?#8000=32A.A>0;A=A-1;R.
340IFC<0A.B>4;B=B-1;C=10;J=10;K=20;M=3;G.e
345R.
350cD=A+2+(B*32);IFD?#8000=32A.A<30;A=A+1;R.
360G.340
370eF.I=J TO K S.M;?#80=I;LI.RR0;N.;GOS.a;R.
380dF?#8000=32;N?#8000=32
381G?#8000=32
382IFF?#8020=255;F?#8000=255;GOS.f;G.k
383IFF?#8020=76;F=A.R.%32;GOS.9
384IFG?#8020=255;G?#8000=255;GOS.f;G.l
385IFG?#8020=76;G=A.R.%32;GOS.9
386IFN?#8020=255;N?#8000=255;GOS.f;G.m
387IFN?#8020=76;N=A.R.%32;GOS.9
390F=F+32;G=G+32;N=N+32
400F?#8000=79;G?#8000=79;N?#8000=79
410GOS.a
490R.
500fJ=1;K=3;M=1;G.e
5109O=O+1;J=9;K=-39;M=-18;P.$30,O;G.e
520hJ=50;K=-50;M=-1;GOS.e;IFO>Q;Q=O;P.Q
525J=-10;K=10;M=1
530LI.#FFE3;GOS.e;G.70
540kIFF<97;G.h
550F=A.R.%32;G.383
560lIFG<97;G.h
570G=A.R.%32;G.385
580mIFN<97;G.h
590N=A.R.%32;G.387
```





BY C. STANGROOM &
I. MACNAUGHTON

IN 27K

No games supplement would be complete without that little denizen of the mazes. So here he is – renamed and revamped for the Sharp MZ80k!

Guide your little Muncher around his maze home eating up points and the Munchers favourite snack called "Gulps". These "Gulps" are extremely important as they guard you against the attentions of those nasty ghosts which also haunt the corridors of the maze.

If you manage to gobble down 20 "Gulps" the ghost which is chasing you will turn white with fear and runs away. If you catch and eat the ghost while he is in this fear-stricken state the score is given and you get a new restocked maze.

Avoiding the ghost is a difficult task and there are several surprise features built into this program should you manage to chalk up a high score – which are best left for you to find out! At the end of each game the top ten scores are displayed.

To move your little Muncher around use the W, A, D and X keys as in many MZ80k games.

If you find the game too difficult then a useful tip is to change the value of the variable P9 in line 420 which specifies the number of "Gulps" that must be munched before the ghost turns white.

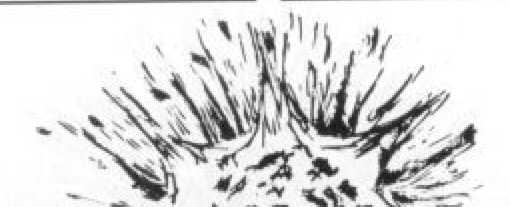
The author has managed a high score of 258,000 – so that's the target for all you maze fans out there!

Variables:
206, 207–different ghosts.
46–fullstop. 202–man.
208–grey walls.
191–"Gulps". PEEK (17828)– address contains ASC code of key passed in GET routine. 53248– screen address (TOP LEFT).

The author says that conversion to a Pet is easy using the above variables.

MUNCHERS

```
1 GOSUB3000:POKE10167,1
2 TEMPO7
3 MUSIC"‾CBAGAGFEDRDRC2"
10 DIMG(4),D(4),E(4),HS(10),N$(10)
15 G(1)=53704:G(2)=53320:G(3)=54166:G(4)=54130:X9=0:II=0
16 FORN=1TO4:D(N)=G(N):NEXTN
20 O=1
30 PRINT"▒Press Any key or E to end."
32 GETA$:IFA$="E"THENPRINT"▒Thankyou.":END
33 IFA$=""THEN32
90 A1$="A":A2$="D":A3$="W":A4$="X"
91 PRINT"▒USE DIFFERENT KEYS?"
92 GETA$:IFA$=""THEN92
93 IFA$="N"THEN98
94 INPUT "▒WEST KEY?  ";A1$
95 INPUT "▒EAST KEY?  ";A2$
96 INPUT "▒NORTH KEY? ";A3$
97 INPUT "▒SOUTH KEY? ";A4$
98 A=ASC(A1$):B=ASC(A2$):C=ASC(A3$):D=ASC(A4$)
100 PRINT "▒▒▒MUNCHERS."
110 PRINT "▒Press ANY KEY."
120 GET A$:IF A$="" THEN 120
130 REM **** DRAW MAZE ****
135 PRINT "▒ ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒";
140 PRINT "  ▒*............*...........*▒";
150 PRINT "  ▒.▒▒▒▒▒.▒▒▒▒▒▒▒.▒▒.▒▒▒▒▒▒▒.▒▒▒▒▒▒▒.▒";
160 PRINT "▒▒......▒.......▒*▒▒.......▒.........▒";
170 PRINT ".▒.▒▒▒▒.▒▒▒▒▒▒▒.▒.▒..▒▒▒▒▒▒.▒▒▒▒▒▒▒▒.▒.▒";
180 PRINT "▒▒*..........*▒.▒*...............▒*▒";
190 PRINT "  ▒.▒▒▒▒▒▒▒▒▒▒▒▒.▒.▒.▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒.▒.▒";
200 PRINT "  ▒..........*▒.................*▒.▒";
210 PRINT "  ▒▒ ▒▒.▒▒▒▒▒▒...▒▒▒...▒▒▒▒▒▒▒▒▒▒▒▒▒.▒.▒";
220 PRINT "  ▒..........*▒........*.........▒";
230 PRINT "  ▒*....▒....▒...▒▒▒...▒....*▒.....▒....▒▒";
240 PRINT "▒▒.....▒*...▒....*........▒.....▒..*....";
250 PRINT "...▒▒▒▒*..▒▒ ▒....▒▒ ▒*▒▒▒▒▒▒...▒ ▒▒..*▒▒▒.▒";
260 PRINT "▒▒*....▒.......▒.*▒.....▒*▒.▒*▒.....▒....*▒";
280 PRINT "  ▒*...........................*..▒";
290 PRINT "  ▒▒ ▒▒▒▒.▒▒▒.▒▒▒▒▒▒▒▒▒.▒▒▒▒▒▒▒▒.▒▒▒▒▒▒▒.▒";
300 PRINT "  ▒*....▒.........*...▒..............*...▒";
310 PRINT "  ▒.▒▒▒▒.*.▒▒▒▒.▒▒▒▒▒▒.*.▒▒▒▒▒▒▒▒..▒▒▒▒*▒.▒";
320 PRINT "  ▒..*..▒.....▒.......▒.........*▒.......*▒";
330 PRINT "  ▒.▒▒▒▒▒.▒▒▒▒▒▒▒▒▒▒.▒▒▒▒▒ ▒▒▒.▒▒▒▒▒▒▒▒▒.▒";
340 PRINT "▒▒............*.........▒.................▒";
350 PRINT ".▒.▒▒▒▒▒.▒▒▒▒▒▒▒▒▒▒.▒▒▒.*.▒▒▒▒▒▒▒▒▒▒.▒▒▒.▒";
360 PRINT "▒▒..*.............................▒";
370 PRINT "  ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒";
380 GOTO4000
```

```
400 REM **** VARIABLES ****
410 X=53293:Y=202:Q=17828:E=208:F=207
420 I=1:J=-1:K=40:L=-40:M=30:T=10:V=191:P=0:P9=20:G=206:T1=11+(O*1.5)
430 I1=1:J1=-1:K1=40:L1=-40
440 POKEX,Y
500 GETX$:IFPEEK(Q)=ATHENXX=J
520 IFPEEK(Q)=BTHENXX=I
530 IFPEEK(Q)=CTHENXX=L
540 IFPEEK(Q)=DTHENXX=K
560 X=X+XX:IFPEEK(X)=ETHENX=X-XX:GOTO621
570 IFPEEK(X)=FTHEN2000
580 IFPEEK(X)=UTHENSC=SC+T
590 IFPEEK(X)=VTHENP=P+I
600 IF(P=P9)*(K2=0)THENF=G:TI$="000000":I1=-I1:J1=-J1:K1=-K1:L1=-L1:M=-M:K2=1
620 POKEX-XX,0:POKEX,Y
621 FORH=1TOO:POKEG(H),F
710 IFG(H)>X+MTHENGG=L1:GOTO750
720 IFG(H)<X-MTHENGG=K1:GOTO750
730 IFG(H)<XTHENGG=I1:GOTO750
740 GG=J1:GOTO750
745 IF(PEEK(G(H)+K1)=E)*(PEEK(G(H)+I1)=E)THENGG=J1:GOTO750
747 IF (PEEK(G(H)-K1)=E)*(PEEK(G(H)-I1)=E)THENGG=I1
750 G(H)=G(H)+GG:POKE G(H)-GG,U
780 IFPEEK(G(H))=ETHENG(H)=G(H)-GG:GG=SGN(GG)*41-GG:GOTO745
790 IFPEEK(G(H))=YTHEN2000
795 IF(K2=1)*(VAL(TI$)>=T1)THENF=207:K2=0:I1=-I1:J1=-J1:
K1=-K1:L1=-L1:M=-M:P=0
800 POKEG(H),F:NEXTH:GOTO500
2000 IFF=206THEN5000
2005 SC=SC+II*1000000
2006 SC=SC+P*100
2007 FORJ=0TO5:FORI=1TOJ*50STEPJ:POKE4514,I:USR(68):NEXTI,J
2008 FORJ=255TO1STEP-3:POKE4514,J:USR(68):NEXTJ
2009 USR(71)
2010 PRINT "▒MUNCH!!!"
2020 PRINT"▒SCORE = ";SC
2030 IFSC>HS(10)THENINPUT"NAME? ";N$(10)
2031 IFLEN(N$(10))>15THENPRINT"TOO LONG...(MAX 15)":GOTO2030
2032 IFSC>HS(10)THENHS(10)=SC:GOTO2040
2034 MUSIC "CDEEEFGGGC"
2035 GOTO2130
2040 REM **** HALL OF FAME ****
2050 FORS1=1TO9:M=0
2060 FORS2=S1TO10
2070 IFHS(S2)<=MTHEN2090
2080 M=HS(S2):S3=S2
2090 NEXTS2
2100 HS(S3)=HS(S1):HS(S1)=M
2110 N$=N$(S3):N$(S3)=N$(S1):N$(S1)=N$
2120 NEXTS1
2130 PRINT"▒Hall of Fame...."
2140 FORN=1TO10
2150 PRINT"▒";N;".";TAB(4);HS(N);TAB(20);N$(N)
2160 NEXTN
2170 SC=0:GOTO10
3000 REM **** INSTRUCTIONS ****
3010 PRINT"▒▒▒MUNCHERS."
3020 B1$="▒Written by        "
3030 B2$="▒Chris Stangroom "
3040 B3$="▒Iain MacNaughton"
3050 FORN=1TOLEN(B1$):PRINTMID$(B1$,N,1);:FORI=1TO20:NEXTI:NEXTN:PRINT
3060 FORN=1TOLEN(B2$):PRINTMID$(B2$,N,1);:FORI=1TO20:NEXTI:NEXTN:PRINT
3063 PRINT "▒▒▒▒▒▒&"
3065 FORN=1TOLEN(B3$):PRINTMID$(B3$,N,1);:FORI=1TO20:NEXTI:NEXTN
3070 PRINT"▒▒▒▒▒▒▒Instructions? (Y/N)"
3090 FORN=1TO500:NEXTN
3100 GETA$
3110 IFA$=""THEN3100
3120 FORN=53608TO53613:POKEN,207:FORT=1TO250STEP50:POKE4514,T:USR(68)
3130 NEXTT:POKEN,0:NEXTN:USR(71)
3131 POKE53573,207:GOSUB5300:POKE53573,0:GOSUB5300:POKE53533,207:GOSUB5300
3132 POKE53533,0:GOSUB5300:POKE53573,207:GOSUB5300:POKE53573,0:GOSUB5300
3133 FORN=53613TO53623:POKEN,207:FORT=1TO250STEP50:POKE4514,T:USR(68):NEXTT
3135 POKEN,0:NEXTN:USR(68):POKE4465,0:POKE4466,9:PRINT"G O O D  L U C K"
3137 USR(71):FORN=1TO1000:NEXT
3140 IFA$="N"THEN3280
3145 USR(71)
3150 PRINT "▒Instructions."
3160 PRINT "▒Run from the GHOST ( ) & eat the dots"
3170 PRINT "▒& GULPS ( ). As soon as you have"
3180 PRINT "▒eaten 20 GULPS, the Ghost turns"
3190 PRINT "▒WHITE and you must chase it."
```

82




```
3200 PRINT "■If you catch it, a new screen will"
3210 PRINT "■appear. Normal controls are:-"
3220 PRINT "■A --- WEST."
3230 PRINT "■D --- EAST."
3240 PRINT "■W --- NORTH."
3250 PRINT "■X --- SOUTH.                    Press Any Key."
3260 POKE53348,207:POKE53417,191
3270 GETA$:IFA$=""THEN3270
3280 REM **** DATA ****
3290 DIMH(25),P(100),T(33)
3300 USR(62):FORN=1TO25:READH(N):H(N)=H(N)+53000:NEXTN
3310 DATA 751,975,542,376,972,997,987,980,681,676,700,695,595,343,355,622,763
3320 DATA 764,765,498,418,424,516,1071,785
3330 FORN=1TO100:READP(N):NEXTN
3340 DATA 1,1,1,1,2,2,2,1,3,3
3350 DATA 3,3,1,4,1,4,1,4,3,1
3360 DATA 3,4,4,2,2,1,4,1,4,2
3370 DATA 1,1,2,2,3,3,4,4,2,2
3380 DATA 2,1,1,4,4,1,3,4,2,3
3390 DATA 3,3,2,3,4,4,3,1,1,2
3400 DATA 2,2,2,3,4,1,4,4,1,1
3410 DATA 2,3,4,2,3,4,3,2,3,4
3420 DATA 1,1,1,2,2,2,3,3,3,4
3430 DATA 4,4,2,2,3,3,2,2,3,2
3440 FORN=1TO27:READT(N):NEXTN
3450 DATA 13,17,20,26,30,33,34,39,40,42,43,49,53,59,60,61,62
3460 DATA 66,69,71,74,78,93,94,97,98,100
3470 REM **** FINISH ****
3480 RETURN
4000 REM **** VARIATIONS ****
4010 REM
4020 REM * HOLES *
4030 FORN=1TOINT(SC/40000)
4040 POKEH(N),46
4050 NEXTN
4060 REM * NUMBER OF PUDS *
4070 O=P(INT(SC/10000))
4080 REM * TRAIL *
4090 U=46
4100 FORN=1TO27
4110 IFINT(SC/10000)=T(N)THENU=207
4120 NEXTN
4130 REM * HOLES BLOCKED UP *
4140 IFRND(1)<0.5THENPOKE53729,207
4150 IF(RND(1)<0.2)*(O<4)*(U=46)THENPOKE53407,46:POKE53409,46
4160 IF(RND(1)<0.2)*(O<4)*(U=46)THENPOKE54087,46:POKE54089,46
4170 IFSC+II*1000000 >500000THENX9=10000
4180 GOTO400
5000 ST=0:SC=SC+P*100:K2=0
5001 GOSUB5200
5007 FORNN=1TO55
5008 ST=ST+1
5010 FORN=255TO1STEP-ST*2
5020 POKE4513,N:USR(68)
5030 NEXTN
5035 NEXTNN
5045 SC=SC+2000+X9:FT=FT+1
5046 IF FT=4 THEN FT=1:GOTO 5100
5047 IFSC>1000000THENII=II+1:SC=SC-1000000
5048 PRINT"■■■SCORE = ";SC+II*1000000
5050 USR(71):ST=0
5060 POKE4466,23:PRINT"■■PRESS ANY KEY."
5070 GETA$:IFA$=""THEN5070
5080 USR(62):GOTO130
5100 FOR NN=55 TO 1 STEP-1
5110 ST=ST-1
5120 FOR N=255 TO 1 STEP -ST*2
5130 POKE 4513,N:USR(68)
5140 NEXT N
5150 NEXT NN
5160 SC=SC+10000+X9:FT=1:GOTO 5047
5200 REM * START POSITIONS *
5210 FORN=1TO4
5220 E(N)=INT(RND(1)*4)+1
5230 FORI=N-1TO1STEP-1:IFE(I)=E(N)THEN5220
5240 NEXTI
5250 NEXTN
5260 REM * SWAP *
5270 FORN=1TO4:G(N)=D(E(N)):NEXTN
5280 RETURN
5300 FORT=1TO50:NEXTT:RETURN
```






BY S. WIDER

In Short Circuit you are charged with repairing a silicon chip from the inside.

Your mission is to help Fred the Repairman to rectify a short circuit in the wall of the chip.

This is done by picking up the pills of silicon chip repairing vitamins which can be found on the edge of screen.

Fred must be guided through the chip using the keys:

Up - 7
Down - J
Left - Y
Right - I

Fred must not touch anything on his way up to the vitamin pills or he will be instantly fried by 10 billion volts. He must also beware of the Sparx which wander around the chip.

A nice display awaits you should you complete Fred's hazardous task. And the author's highest score is 1,980 so try and beat that.

Next month we publish the sequel to this game called Repairman's Revenge. And the author has speeded up his sparx and armed Fred with an energy gun. . . don't miss it Sharp owners.

SHORT CIRCUIT

```
1 GOTO 9600
2 GOTO 9500
3 POKE 10167,1:TEMPO 7
4 PRINT"▣":FOR A=1 TO 100:X=INT(49*RND(1)):
Y=INT(79*RND(1)):SET Y,X
5 NEXT
6 PRINTTAB(17);"▣▣▣▣▣▣▣SHORT"
7 PRINTTAB(16);"CIRCUIT"
8 PRINT:PRINTTAB(17);"-\/-"
9 PRINTTAB(17); "▒OO▒"
10 PRINTTAB(17);"O/ \O"
11 PRINTTAB(17);"(  ‿  )"
13 PRINTTAB(17);"( ▀▀ )"
14 PRINTTAB(17);" \__/ ":PRINTTAB(3);
"(C)copyright stuart wider(7.6.82)"
15 FOR G=1 TO 1000:NEXT:USR(71):SC=0:T=0
16 FOR X=1 TO 50:PRINT:NEXT:BN=53540
70 DIM M(255)
71 FOR C=0 TO 255:POKE 4514,C:USR(68)
72 M(C)=BN:BN=BN+1
73 NEXT
74 PRINT"▣"
83 PRINTTAB(9);"▣▣▣▣▒▒◣ ▒▒▒ ◢▒◣ ▒▒◣ ▒ ▒  ▒"
84 PRINTTAB(9);"▒ ▒ ▒   ▒ ▒ ▒ ▒ ◥▒◤   ▒"
85 PRINTTAB(9);"▒▒◤ ▒▒   ▒▒▒ ▒ ▒  ▒    ▒"
86 PRINTTAB(9);"▒◥◣ ▒   ▒ ▒ ▒ ▒  ▒    ▒"
87 PRINTTAB(9);"▒ ▒ ▒ ▒▒▒ ▒ ▒ ▒▒◤  ▒     "
88 USR(71):FOR GV=1 TO1000:NEXT GV
90 PRINT"▣▣▣  SCORE              HI-SCORE";HS;"  ";X$:TEMPO 7
100 PRINT"◢▒▒"
110 PRINT"▒~~~~~~~===================~~~~~▒▒◣"
120 PRINT"▒                                  ▒"
130 PRINT"▒                                  ▒"
140 PRINT"▒                                  ▒"
150 PRINT"▒                                  ▒"
160 PRINT"▒                                  ▒"
170 PRINT"▒▒▒▒▒▒▒▒   ▒▒▒▒▒▒▒▒▒▒▒▒▒▒   ▒▒▒▒▒▒▒"
180 PRINT"▒                                  ▒"
190 PRINT"▒▒                                 ▒"
200 PRINT"▒                                 ▒▒"
210 PRINT"▒     ▒▒▒▒▒▒▒▒▒▒▒▒  ▒▒▒▒▒▒▒▒▒▒▒▒    ▒"
220 PRINT"▒                                  ▒"
240 PRINT"▒▒                                 ▒"
250 PRINT"▒                                 ▒▒"
260 PRINT"▒▒▒   ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒   ▒▒▒"
270 PRINT"▒                                  ▒"
280 PRINT"▒                                  ▒"
290 PRINT"▒                                  ▒"
300 PRINT"▒                                  ▒"
310 PRINT"▒▒▒▒▒▒▒▒●●●●●●●●●●●●●●●●▒▒▒▒▒▒▒▒▒▒"
320 PRINT"▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒"
330 PRINT"▣"
335 PRINT
340 PRINTTAB(33);"SHORT"
350 PRINTTAB(32);"CIRCUIT"
360 PRINT:PRINTTAB(33);"-\/-"
370 PRINTTAB(33);"▒OO▒"
380 PRINTTAB(33);"O/ \O"
390 PRINTTAB(33);"(  ‿  )"
400 PRINTTAB(33);"( ▀▀ )"
410 PRINTTAB(33);" \__/ "
415 PRINT
420 PRINTTAB(33);"BY"
430 PRINTTAB(33);"STUART"
```

84

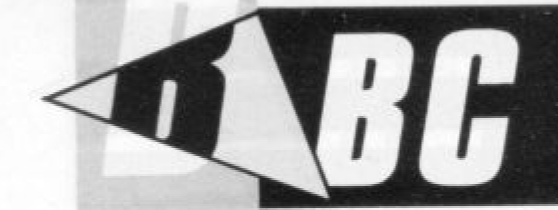


83

```
460 PRINTTAB(33);"WIDER"
461 REM ↑↑↑SET UP VARIABLES↑↑↑↑
462 MAN=56935-40
463 A=207
464 C=1
500 GOSUB 1000
520 GOTO 500
1000 GET A$
1001 POKE 4514,255:USR(68)
1010 IF PEEK(17828)=55 THEN POKE
1020 IF PEEK(17828)=73 THEN POKE
1030 IF PEEK(17828)=74 THEN POKE
1040 IF PEEK(17828)=89 THEN POKE
MAN,0:MAN=MAN-40
MAN,0:MAN=MAN+1
MAN,0:MAN=MAN+40
MAN,0:MAN=MAN-1
1042 USR(71)
1050 POKE MAN,A
1051 GOTO 5000
1052 IF A=206 THEN GOTO 3500
1055 IF(PEEK(MAN+40)=71)THEN A=206:
POKE MAN+40,0:GOTO 6000:MO=0
1060 IF(PEEK(MAN+1)<>0)THEN GOTO 3000
1070 IF(PEEK(MAN-1)<>0)THEN GOTO 3000
1080 IF(PEEK(MAN+40)<>0)THEN GOTO 3000
1090 IF(PEEK(MAN-40)<>0)THEN GOTO 3000
1100 RETURN
1956 IF A=207 THEN GOTO 1055
3000 FOR B=206 TO 207
3001 POKE 4514,200:USR(68)
3010 POKE MAN,B
3025 C=C+1
3026 IF C>50 THEN 3040
3030 NEXT B
3035 GOTO 3000
3040 POKE MAN-1,227:POKE MAN-2,227
3045 POKE MAN+1,227:POKE MAN+2,227
3050 POKE MAN,166
3060 POKE MAN+40,238:POKE MAN-40,238
3065 POKE MAN+80,238:POKE MAN-80,238
3072 POKE MAN-1,0:POKE MAN-2,0
3073 POKE MAN+1,0:POKE MAN+2,0
3074 POKE MAN,0
3075 POKE MAN+40,0:POKE MAN-40,0
3076 POKE MAN+80,0:POKE MAN-80,0
3090 FOR VC=1 TO 255:POKE 4514,VC:
USR(68):NEXT VC
3091 USR(71):FOR VB=1 TO 1000:NEXT VB
3092 IF SC>HS THEN PRINT"▒▒▒▒▒Well
done!! Please enter your name...."
3094 IF SC>HS THEN INPUT X$
3095 AA=LEN(X$):IF AA>10 THEN GOTO 3092
3096 IF SC>HS THEN HS=SC
3097 PRINTTAB(9);"ANOTHER GAME ?"
3098 GET A$
3099 IF A$="Y" THEN PRINTTAB(14);
"YES":GOTO 15
3100 IF A$="N" THEN END
3101 GOTO 3098
3500 IF(PEEK(MAN-40)=43)
THEN POKE MAN-40,71:
MAN=MAN+40:A=207:GOTO 7000
3510 POKE MAN,A
3515 GOTO 1060
5000 C=C+1
5001 POKE M(C),0
5010 IF C=>9 THEN C=0
5020 X=INT(4*RND(1))
5025 POKE M(C),0
```



```
5030 IF X=1 THEN IF(PEEK(M(C)+1)=0)THEN M(C)=M(C)+1
5040 IF X=2 THEN IF(PEEK(M(C)-1)=0)THEN M(C)=M(C)-1
5060 IF X=3 THEN IF(PEEK(M(C)+40)=0)THEN M(C)=M(C)+40
5110 POKE M(C),107:GOTO 1052
6000 PRINT"▢":SC=SC+1*T:PRINTTAB(7);SC:T=T+1:IF T=30 THEN 8000
6001 FOR D=100 TO 10 STEP-1
6002 POKE 4514,D:USR(68):NEXT
6003 FOR E=50 TO 0 STEP -1
6004 POKE 4514,E:USR(68):NEXT:MUSIC"R1":GOTO 1100
7000 POKE MAN-40,0:POKE MAN,206:GOTO 6000
8000 FOR X=250TO10 STEP-10:POKE 4514,X:USR(68)
8001 PRINT"▢": PRINTTAB(1);"● ● ●○● ● ●  ●○  ● ●○   ● ●●●
8002 PRINTTAB(1);" ○  ○ ○ ○ ○  ○ ● ○ ○ ●  ○  ○ "
8003 PRINTTAB(1);" ●  ●○● ●○●  ●○  ● ●○   ●  ● "
8005 VC=VC+1
8007 IF VC<2 THEN GOTO 8005
8009 VC=0
8010 PRINT"▢":PRINTTAB(1);"○ ○ ○●○ ○ ○  ○●  ○ ○●   ○ ○○○"
8011 PRINTTAB(1);" ●  ● ● ● ●  ● ○ ● ● ○  ●  ● "
8012 PRINTTAB(1);" ○  ○●○ ○●○  ○●  ○ ○●   ○  ○ "
8013 NEXT:T=0
8014 ZZ=ZZ+1:POKE 4514,ZZ:USR(68)
8015 POKE 59555,1:FOR AA=1 TO 50:NEXT
8016 POKE 59555,0:FOR AA=1 TO 50:NEXT
8017 IF ZZ<10 THEN GOTO 8014
8018 ZZ=0
8020 GOTO 16
9000 PRINT"▢"
9002 PRINT"SHORT CIRCUIT"
9004 PRINT"             "
9006 PRINT" USING THE  7(↑),I(→),J(↓),Y(←) KEYS"
9008 PRINT" PICK UP AN ENERGY BRICK FROM THE"
9010 PRINT" BOTTOM OF THE MAZE."
9012 PRINT" TRANSPORT IT TO THE TOP OF THE MAZE "
9014 PRINT" TO REPAIR THE SHORT CIRCUIT."
9016 PRINT" AVOID TOUCHING THE WALLS OF THE MAZE"
9018 PRINT" AND THE DEADLY SPARX AS THEY ARE "
9020 PRINT" CHARGED WITH ONE BILLION VOLTS."
9022 PRINT" YOU HAVE ONLY ONE LIFE....GOOD LUCK!!"
9024 PRINT" PRESS (S) TO START..........."
9026 GET A$
9028 IF A$="S" THEN GOTO 3
9030 GOTO 9026
9500 PRINT"▢":TEMPO 7
9505 B$="DO YOU NEED INSTRUCTIONS(Y/N)"
9510 FOR CV=1 TO LEN(B$)
9515 PRINT"▢":PRINTLEFT$(B$,CV):MUSIC"A"
9520 NEXT CV
9525 GET B$
9530 IF B$="Y" THEN 9000
9540 IF B$="N" THEN 3
9550 GOTO 9525
9600 PRINT"▢"
9605 PRINT"
9610 PRINT"        "
9615 PRINT"             T"
9620 PRINT"             I"
9625 PRINT
9630 PRINT"             T"
9635 PRINT"             I"
9640 PRINT"             I"
9700 PRINTTAB(17);"▢▢▢SHORT"
9701 PRINTTAB(16);"CIRCUIT"
9702 PRINT:PRINTTAB(17);"\/"
9703 PRINTTAB(17);"OO"
9704 PRINTTAB(17);"O/\O"
9705 PRINTTAB(17);"( )"
9706 PRINTTAB(17);"( )"
9707 PRINTTAB(17);"    ":PRINTTAB(3);"(C)copyright
stuart wider(7.6.82)"
9708 PRINT
9710 PRINTTAB(10);"PRESS (S) TO START."
9720 FOR DF=1 TO 50:NEXT DF
9730 POKE 59555,0
9740 FOR FD=1 TO 100:NEXT FD
9750 POKE 59555,1
9760 GET V$
9770 IF V$="S" THEN 2
9780 GOTO 9720
```



BY J. McFARLANE

ON MODEL A

IN 32K

Arcade action for Beeb space captains with an eye for the aliens. This is a version of that all-time arcade classic Defender. Flying over the mountainous terrain of your planet you come upon an alien invader swooping in for the attack.

Line the attacking ship up in the sights of your laser-blaster and fire away. If you score a hit the alien craft will explode into a million small fragments. Those alien ships will keep on coming until you have wiped out the entire fleet - and you have just three ships to complete the task.

There are three skill levels to master - but do not move above the first until you have mastered the controls. The program uses the ENVELOPE and VDU commands to provide realistic sound and graphics.

There is on-screen scoring and you get an extra ship at 1,000 points, as well as a high score facility.

The author's high score is 1,500 on level three - can you better it!

DEFENDER

```
10 ONERRORGOTO970
20 AA$="":VDU23,230,0,64,96,112,127,63,31,0,23,231,0,0,96,
144,248,255,248,0,23,232,0,7,63,114,114,63,7,0,23,233,0,224,
252,78,78,252,224,0,23,234,129,66,36,24,24,36,66,129,23,236,
0,16,16,16,248,172,252,252,23,237,0,0,0,49,25,13,7,3
30 MODE1:VDU23,238,0,0,0,140,152,176,224,192,23,235,0,0,64,64
,67,66,67,67:ENVELOPE1,1,1,-1,1,1,1,1,126,0,0,-5,126,0:IFH%<0
H%=0:*FX11,1
40A$=CHR$230+CHR$231:B$=CHR$232+CHR$233:C$=CHR$234:BONSH%=0:E
NVELOPE2,10,0,0,0,10,10,10,126,-5,-5,-5,126,0:BB$="":ENVELOPE
3,7,-10,20,-10,1,1,1,0,0,0,-127,50,0
50 PROCINST
60 BS%=0:AS%=0:EX=0:S%=0:A%=50:B%=500:VDU5:RESTORE960:*FX12,0
70 LIV%=3:LIV$=STRING$(2,CHR$230+CHR$231+" "):VDU4:CLS:INPUT'
''"Which level(1-3)",LEV%:CLS:VDU5:IFLEV%<1 ORLEV%>3 THEN70
80 *FX11,1
90 ONLEV%GOSUB830,840,850
100 VDU23;8202;0;0;0;:PROCTERR
110 *FX15,0
120 R=RND(4):ONR GOSUB280,290,300,310
130 BON%=RND(10):IFBON%=1 PRINTTAB(0,3)"Double points!!":BON%=
2 ELSEIFBON%=3 PRINTTAB(0,3)"Mystery points!!":BON%=RND(4) ELS
E BON%=1
140 GCOL4,3:MOVEA%,B%:PRINTA$:IFR<3 MOVEC%,D%
150 IFR=2PRINTB$:SOUND3,1,20,255 ELSEIFR=1PRINTC$:SOUND3,3,100
,255
160 PROCYOU:IF ALIEN=0 PROCAL:EX=0
170 GOTO160
180 DEFPROCYOU
190 GCOL4,0:MOVEA%,B%:PRINTA$:Z$=INKEY$(0):IFZ$="K"BS%=BS%+1EL
SEIFZ$="L"BS%=BS%-1ELSEIFZ$="A"AS%=AS%+4ELSEIFZ$="S"AS%=AS%-4
200 *FX15,1
210 IFAS%>90 AS%=90 ELSEIFAS%<MS% AS%=MS%
220 IFBS%>10 BS%=10 ELSEIFBS%<-20 BS%=-20
230 B%=B%+BS%:A%=A%+AS%
240 IFA%>=1250 AND EX=0 THEN100 ELSEIFB%<=0 OR B%>=1000 THEN57
0 ELSEIFA%>1250THENN%=31:ENDPROC
250 GCOL4,3:MOVEA%,B%:PRINTA$:IFZ$=" "ANDEX=0 ANDALIEN=0 GOTO3
30
260 IFA%<C%+32 ANDA%>C% ANDB%-16<D% ANDB%-16>D%-32 THEN570
270 ENDPROC
280 C%=1200:D%=RND(500)+100:RETURN
290 C%=1200:D%=RND(500)+100:RETURN
300 GOSUB320:MOVEC%,D%:PRINTCHR$235;CHR$236:RETURN
310 GOSUB320:MOVEC%,D%:PRINTCHR$237;CHR$238:RETURN
320 C%=1110:D%=X+33:RETURN
330 MOVEA%+64,B%-16:GCOL4,3:DRAW1280,B%-16:SOUND1,-15,200,1:SO
UND2,-15,205,1:GCOL4,0:DRAWA%+64,B%-16:IFB%-16<D% ANDB%-16>D%-
32 ANDA%<=C% THEN340ELSEENDPROC
340 SOUND0,2,5,50:PROCSC:PROCEXP(C%,D%,-1*(R=1)-2*(R=2 OR R=3
OR R=4)):ENDPROC
350 DEFPROCAL
360 ON R GOTO400,370,460,440
370 GCOL4,0:MOVEC%,D%:PRINTB$:C%=C%-CR%:IFD%<B% D%=D%+CR% ELSE
```



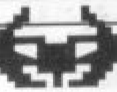

```
D%=D%-CR%
380 GCOL4,3:MOVEC%,D%:PRINTB$:IFRND(FR%)=1 AND C%>A% THENPROCA
FIRE
390 ENDPROC
400 GCOL4,0:MOVEC%,D%:PRINTC$:IFC%<A% THENC%=C%+CR% ELSEIFC%>A%
THENC%=C%-CR%
410 IFD%>B% D%=D%-CR% ELSEIFD%<B% D%=D%+CR%
420 GCOL4,3:MOVEC%,D%:PRINTC$:IFC%<A%+100 AND C%>A%-100 AND D%<
B%+100 AND D%>B%-100 THEN810
430 ENDPROC
440 IFB%<D%THENENDPROC
450 AAX=RND(1280):MOVEAAX,B%:PRINTCHR$(RND(50)+130):IFAAX-16<A%
AND AAX-16>A%-32 THEN570ELSEENDPROC
460 IFD%<B% ANDRND(5)=1 THEN480
470 ENDPROC
480 RS%=RND(140):MOVEC%,D%:GCOL4,3:DRAWA%+RS%,B%:SOUND1,-15,255
,1:SOUND2,-15,250,1:GCOL4,0:DRAWC%,D%:IFRS%<65THEN570
490 ENDPROC
500 ENDPROC
510 DEFPROCTERR
520 IFS%>1000 ANDBONSH%=0 LIV%=LIV%+1:LIV$=LIV$+CHR$230+CHR$231
+" "
530 IFS%>1000 BONSH%=1
540 VDU4,20:CLS:COLOUR3:PRINTTAB(0,1);"Score=";S%;"  ";LIV$;" "
;"Hi-score=";H%;"  ";AA$;"  ";BB$:VDU5:MOVE0,0:GCOL0,2:FORM%=0T
O1100STEP100:X=RND(10)*32-2:DRAWM%,X:NEXT:DRAW1200,X:DRAW1300,R
ND(10)*32-2:ALIEN=0
545 IFA%>1000THENA%=10 ELSEIFA%<10 A%=1200
550 ENDPROC
560 IFB%<=0 B%=10 ELSEIFB%>=1000 B%=990
570 *FX15,0
580 SOUND0,2,4,50
590 VDU19,0,8,0,0,0,19,3,0,0,0,0:GCOL0,1:FORN%=1TO50:MOVEA%+32,
B%-16:DRAWRND(1280),RND(1024):NEXT
600 VDU4,19,0,7,0,0,0,19,3,0,0,0,0
610 LIV%=LIV%-1:LIV$=LEFT$(LIV$,LIV%*3-3):IFLIV%>0THEN940
620 *FX12,0
625 COLOUR3
630 PRINTTAB(10,5);:FORN%=1TO9:READQ$:PRINTQ$;:TIME=0:REPEATUNT
ILTIME=10:NEXT:PRINT" ":PRINT''TAB(10);"Score=";S%:IFS%>H% PROC
HISC
640 *FX11,1
650 PRINT''TAB(10)"Press S to start.":REPEATUNTILGET$="S":GOTO6
0
660 DEFPROCEXP(W1,W2,W3)
670 *FX15,0
680 EX=1:FORN%=1TO5:MOVEC%,D%:SW=RND(50)+130:PRINTCHR$SW:IFW3=2
THENMOVEC%+32,D%:PRINTCHR$SW
690 PROCYOU:NEXT:ALIEN=1:EX=0:GCOL4,0:MOVEC%,D%:PRINTCHR$SW:END
PROC
700 DEFPROCAFIRE
710 MOVEC%,D%-16:GCOL4,3:DRAW0,D%-16:SOUND1,-15,255,1:SOUND2,-1
5,250,1:GCOL4,0:DRAWC%,D%-16:IFD%-16<B% AND D%-16>B%-32 THEN720
ELSEENDPROC
720 GOTO570
730 DEFPROCSC
740 IFR=1 S%=S%+PT%*BON% ELSEIFR=2 S%=S%+PT%*2*BON% ELSEIFR=3
S%=S%+40*BON% ELSES%=S%+30*BON%
750 VDU4:PRINTTAB(6,1);S%:VDU5:ENDPROC
760 DEFPROCHISC
770 *FX15,0
780 PRINT''TAB(10);"Hi-score!!"
790 PRINTTAB(3,14);:BB$=STR$(LEV%):INPUT"Please enter your name
.",AA$:IFLEN(AA$)>4THENAA$=LEFT$(AA$,4)
800 H%=S%:ENDPROC
810 *FX15,0
820 SOUND0,2,4,50:FORN%=1TO50:MOVEC%+16,B%-16:DRAWRND(1280),RND
(1024):NEXT:GOTO600
830 MS%=40:CR%=25:FR%=3:PT%=20:RETURN
840 MS%=15:CR%=15:FR%=8:PT%=10:RETURN
```

88





CONTINUED



87

```
850 MS%=10:CR%=10:FR%=10:PT%=5:RETURN
860 TIME=0:REPEATUNTILTIME=100:A%=50:B%=500:PRINTTAB(6+LIV%*2,1
);" ":VDU5:GOTO100
870 DEFPROCINST
880 PRINT'TAB(15);"BBC Defend":PRINT'"You have three ships.L mo
ves you down,"''"K moves you up,press A to increase speed"'"and
 S to slow down(N.B NOT stop)."''"You can move through the moun
tains"''"without exploding,but do not go too far"
890 PRINT'"up or down.Press space bar to fire.If"''"you fly thr
ough debris you will explode."'"Level 3 is the easiest,level 1
is the"''"hardest.There are more points in level 1"''than in th
e other levels.Top 1000 for an"'"extra ship."
900 PRINT''"Press 'S' to continue."''"J.McFarlane 1982.":REPEAT
UNTILGETØ="S"
910 CLS:PRINT''AØ;"  Your ship."''BØ;"  Alien ship.Moves about
and fires"''"at you."''CØ;"  Death satellite.Moves in close and
"''"explodes."''CHRØ235;CHRØ236"  Radar base.Fires accurate mis
silies"''"at overhead ships."''CHRØ237;CHRØ238;
920 PRINT;"  AA gun.Fires flak at overhead ships.":PRINT"Press
S to start.";:REPEATUNTILGETØ="S"
930 ENDPROC
940 REPEATUNTILADVAL(-5)=15:A%=50:IFB%<100 B%=200
950 GOTO100
960 DATAG,A,M,E," ",O,V,E,R
970 MODE1:GOTO50
```



BY Y. BARRINGTON

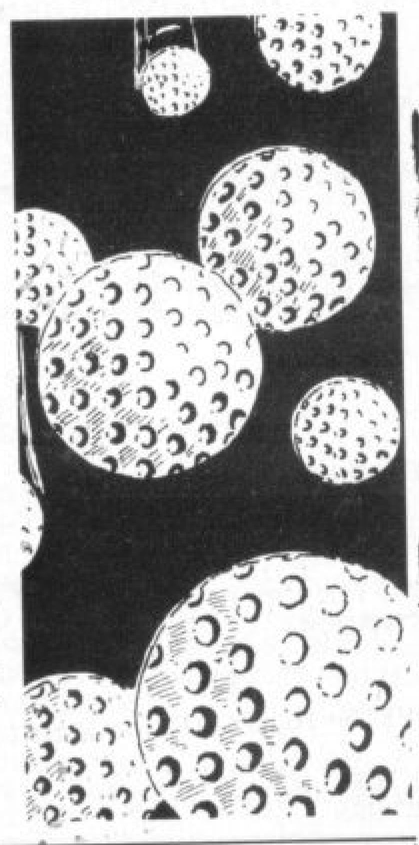
IN 1K

GOLF

This is a variation on the usual golf programs in that you don't have to battle your way around an entire course before you get to chip the ball into the hole!

You'll find yourself on the green ready to play your final stroke. The green is presented on screen and the position of the ball in relation to the hole is shown. You have to guess the distance and type it in. If you miss the green is represented and you get another chance.

If you are successful another green is drawn up. The number of the green you are playing and a running total of your score are displayed on the screen. Simple but nearly as frustrating as the real thing.



```
  1 REM "GOLF"
 10 LET H=PI/PI
 11 LET S=PI-PI
 20 LET Z=INT (RND*12)+16
 30 FOR J=0 TO Z
 40 PRINT AT 21,J;"▒"
 50 NEXT J
 60 FOR J=Z+2 TO 31
 70 PRINT AT 21,J;"▒"
 80 NEXT J
 85 PRINT AT 20,0;"O"
 87 PRINT AT 0,0;"HOLE    ";H
 88 PRINT
 89 PRINT "NO OF STROKES    ";S
 90 INPUT X
 95 LET S=S+1
100 FOR J=0 TO X
105 PRINT AT 20,J-1;" "
110 PRINT AT 20,J;"O"
120 NEXT J
130 IF X=Z+1 THEN GOTO 500
132 FOR J=1 TO 30
134 NEXT J
136 CLS
140 GOTO 20
500 PRINT AT 21,X;"O"
505 PRINT AT 20,X;" "
510 LET H=H+1
520 FOR J=1 TO 30
530 NEXT J
531 IF H=10 THEN GOTO 600
535 CLS
540 GOTO 20
600 CLS
610 PRINT "END  OF  GAME"
620 PRINT AT 10,5;"YOUR TOTAL W
AS  ";S
```



BY DAVID JOHNSON

400/800

IN 16K



Whose lousy idea was it anyway to go exploring burnt out volcanoes in Sicily.

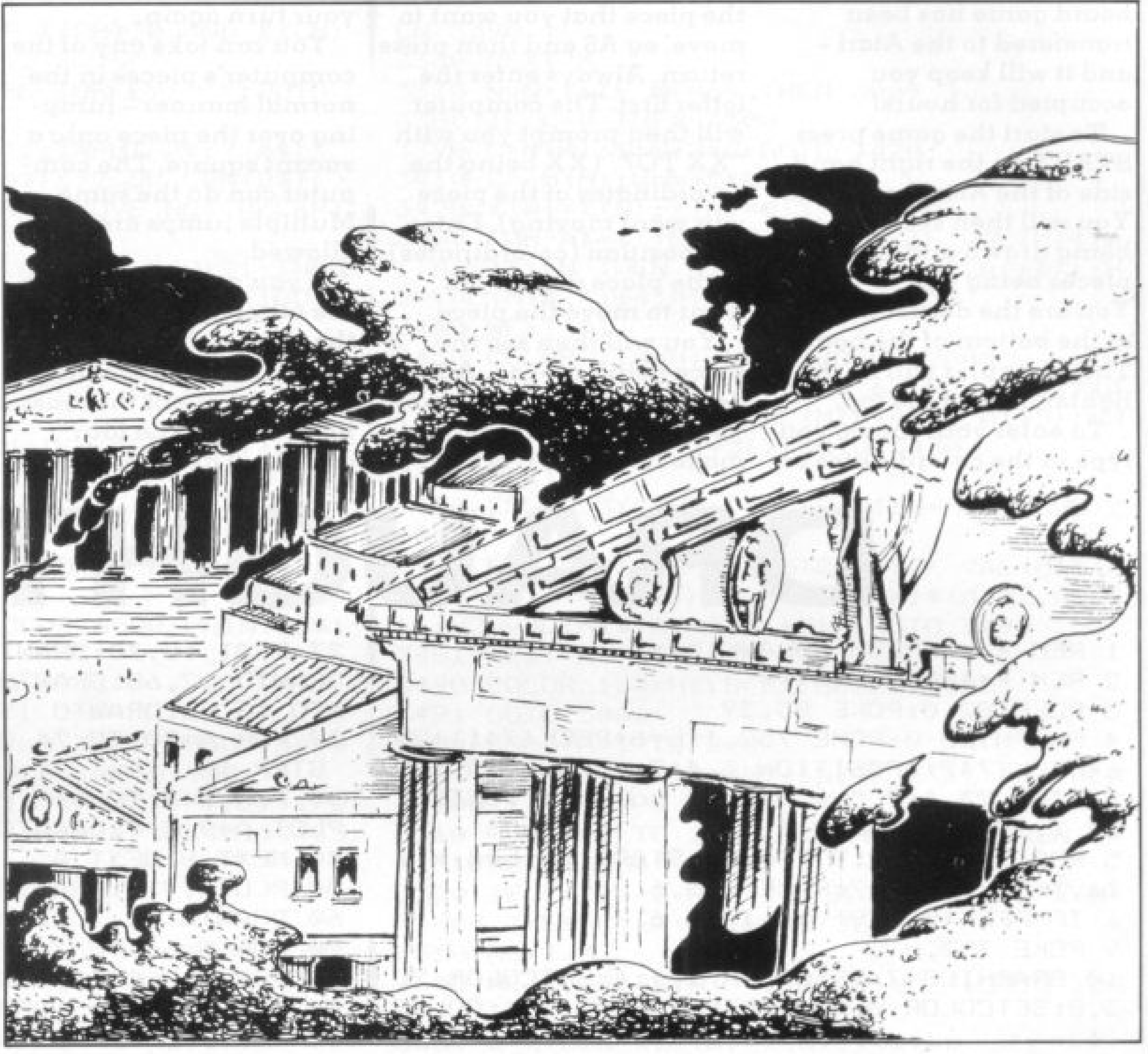
"Oh – so its my fault is it that the volcanoe should blow, I suppose your idea was better was it? – our tenth year in Bognor with your mother and those three mangy cats that she just couldn't possibly leave with the neighbours like everyone else does."

"Thats right, bring my mother into it – as soon as something goes wrong its somehow always attributable to my mother."

Funny isn't it – how people can argue about mother-in-laws when their being chased down a mountain side by 3,000 tonnes of molten lava.

Their fate lies in your hands now as you control a small man desperate to escape.

There is a safe zone beckoning at the far end of the screen and you must guide this survivor to that zone before time runs out. If you make it to the safe zone you go on to the next level.



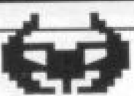
ZIG ZAG

```
5 TIME = 600
10 PRINT "WHAT LEVEL DO YOU
WANT - 1 TO 5? (1 IS EASIEST)"
11 INPUT A
16 GRAPHICS 5
17 D=1: COLOR 3: PLOT 2,2: COLOR
2: PLOT 0,0: DRAW TO 79,0:
PLOT 79,0:DRAW TO 79,39: PLOT 79,39:
DRAW TO 0,39
18 PLOT 0,39: DRAW TO 0,0
20 COLOR 2
22 X=77
24 Y=37
30 FOR I= 1 TO A
40 LET X1=RND(1)
50 LET Y1=RND(1)
60 LET X1=INT(X1*79)
70LET Y1=INT(Y1*39)
75 PLOT X1,Y1
80 NEXT I
90IF STICK(0)=14 THEN D=1
100 IF STICK(0) =13 THEN D=2
110IF STICK(0)=11 THEN D=3
120 IF STICK(0)=7 THEN D=4
122 IF D=1 THEN Y=Y-1
124 IF D=2 THEN Y=Y+1
126 IF D=3 THEN X=X-1
128 IF D=4 THEN X=X+1
130 IF X>79 OR X<1 THEN GO TO 2000
140 IF Y>39 OR Y<1 THEN GO TO 2000
150 LOCATE X,Y,P
152 IF P=3 THEN GO TO 3000
157 TIME = TIME-1
158 IF TIME =0 THEN GO TO 4000
159 PRINT "TIME = ";TIME
160 IF P<>0 THEN GO TO 2000
170 COLOR 2:PLOT X,Y: COLOR 1
190 GO TO 30
2000 FOR I= 1 TO 10: PRINT "CRASH": NEXT I
2010 RUN
3000 SCREEN = SCREEN+1
3010 IF SCREEN = 6 THEN GO TO 3030
3020 GO TO 16
3030 FOR I= 1 TO 10: PRINT"WELL DONE":
FOR J=1 TO 10:PRINT"
":NEXT J: NEXT I
3035 A = A+1
3040 END
4000 FOR I= 1 TO 10: PRINT
"YOU RAN OUT OF TIME"
4010 NEXT I: END
```



BY PARESH SOLANKI

IN 400/800



At last this traditional board game has been transfered to the Atari – and it will keep you occupied for hours!

To start the game press START on the right hand side of the Atari keyboard. You will then see the board being drawn and the pieces being placed on it. You are the darker pieces at the bottom of the board. The computer will be the lighter ones at the top.

To enter your move, you type in the co-ordinates of the piece that you want to move. eg A6 and then press return. Always enter the letter first. The computer will then prompt you with "XX TO?" (XX being the co-ordinates of the piece you want moving). Enter the position (co-ordinates) of the place where you want to move the piece.

You will then see the piece being moved. After a delay of approx. 20 seconds you will see the computer make its move. It is then your turn again.

You can take any of the computer's pieces in the normal manner – jumping over the piece onto a vacant square. The computer can do the same. Multiple jumps are not allowed.

If you manage to reach the other end of the board, the piece will be made a king. You can recognise a king because of the cross it has between the four corners. The same applies to the computers pieces.

Only a king can move backwards and if you attempt to move a non-king backwards you will get an error message. You will then have to re-enter your move.

Many error traps have been included in the program to stop you cheating. For example if you try to move a piece belonging to the computer, you will be prompted with an error message and have to type in your move again!

DRAUGHTS

```
1 REM ***PARESH SOLANKI***
2 REM ***DRAUGHTS***
3 POKE 82,0:POKE 83,39
4 GRAPHICS 0:POKE 752,1:L=6+PEEK(741)+25
6*PEEK(742):POSITION 3,4:? "DRAUGHTS":PO
SITION 23,4:? "by paresh solanki":SETCOL
OR 2,3,4:SETCOLOR 4,3,4
5 POSITION 6,9:? "Press START to begin p
lay":POKE L+4,7:POKE L+5,6
6 IF PEEK(53279)<>6 THEN 6
9 POKE 752,0
10 GRAPHICS 7:SETCOLOR 1,1,4:SETCOLOR 2,
3,8:SETCOLOR 0,4,0:SETCOLOR 4,12,6:COLOR
 1
11 PLOT 22,79:DRAWTO 22,75:DRAWTO 26,75:
DRAWTO 26,79:PLOT 22,77:DRAWTO 26,77
12 PLOT 31,79:DRAWTO 31,75:DRAWTO 34,75:
DRAWTO 34,77:PLOT 31,77:DRAWTO 35,77:DRA
WTO 35,79:DRAWTO 31,79
13 PLOT 45,79:DRAWTO 40,79:DRAWTO 40,75:
DRAWTO 45,75
14 PLOT 49,79:DRAWTO 49,75:DRAWTO 51,75:
DRAWTO 54,76:DRAWTO 54,78:DRAWTO 51,79:D
RAWTO 49,79
15 PLOT 63,79:DRAWTO 58,79:DRAWTO 58,75:
DRAWTO 63,75:PLOT 58,77:DRAWTO 62,77
16 PLOT 67,79:DRAWTO 67,75:DRAWTO 72,75:
PLOT 67,77:DRAWTO 71,77
17 PLOT 82,75:DRAWTO 76,75:DRAWTO 76,79:
DRAWTO 82,79:DRAWTO 82,77:DRAWTO 78,77
18 PLOT 85,75:DRAWTO 85,79:PLOT 90,75:DR
AWTO 90,79:PLOT 85,77:DRAWTO 90,77
20 PLOT 12,3:DRAWTO 14,3:DRAWTO 14,7:PLO
T 12,7:DRAWTO 16,7
21 PLOT 12,12:DRAWTO 16,12:DRAWTO 16,14:
DRAWTO 12,14:DRAWTO 12,16:DRAWTO 16,16
22 PLOT 12,21:DRAWTO 16,21:DRAWTO 16,25:
DRAWTO 12,25:PLOT 12,23:DRAWTO 16,23
23 PLOT 12,30:DRAWTO 12,32:DRAWTO 16,32:
PLOT 16,30:DRAWTO 16,34
24 PLOT 16,39:DRAWTO 12,39:DRAWTO 12,41:
DRAWTO 16,41:DRAWTO 16,43:DRAWTO 12,43
25 PLOT 16,48:DRAWTO 12,48:DRAWTO 12,52:
DRAWTO 16,52:DRAWTO 16,50:DRAWTO 12,50
26 PLOT 12,57:DRAWTO 16,57:DRAWTO 12,61
27 PLOT 12,70:DRAWTO 16,70:DRAWTO 16,68:
DRAWTO 12,68:DRAWTO 12,70:PLOT 13,68:DRA
WTO 13,66:DRAWTO 15,66:DRAWTO 15,68
29 FOR A=20 TO 74 STEP 18:FOR B=10 TO 78
 STEP 18
30 FOR S=B TO B+8:PLOT A,S:DRAWTO A+8,S:
PLOT A+9,S-9:DRAWTO A+17,S-9:NEXT S
40 NEXT B:NEXT A
50 PLOT 19,0:DRAWTO 92,0
60 DRAWTO 92,73:DRAWTO 19,73:DRAWTO 19,0
70 FOR C=66 TO 70:FOR A=22 TO 78 STEP 18
:COLOR 2:PLOT A,C:DRAWTO A+4,C
80 PLOT A+9,C-9:DRAWTO A+13,C-9
85 PLOT A,C-18:DRAWTO A+4,C-18
90 COLOR 3:PLOT A,C-54:DRAWTO A+4,C-54:P
LOT A+9,C-45:DRAWTO A+13,C-45:PLOT A+9,C
-63:DRAWTO A+13,C-63:NEXT A:NEXT C
100 COM CH$(300):CH$="A257A444A631A818B1
63B350B537B724C256C443C630C817D162D349D5
36D723E255E442E629E816F161F348F535"
101 CH$(LEN(CH$)+1)="F722G254G441G628G81
5H160H347H534H721"
105 COM A$(10),B$(10),M(2),B(10),C(10):M
(1)=-6:M(2)=-7:DIM M1$(200)
106 FOR A=1 TO 8:READ B:B(A)=B:NEXT A:DA
TA 22,31,40,49,58,67,76,85
107 FOR A=1 TO 8:READ B:C(A)=B:NEXT A:DA
TA 7,16,25,34,43,52,61,70
108 M1$="1822701740701658701576702431612
3496122676121856131225230405229585228765
2373143364943356743348543"
109 M1$(LEN(M1$)+1)="4422344340344258344
1763450312549492548672547852557221656401
6555816547616633107624907616707608507)"
119 COM X(80):FOR A=15 TO 63:X(A)=9:IF A
<64 AND A>46 AND A<>51 AND A<>52 AND A<>
53 AND A<>58 AND A<>59 THEN X(A)=-1
120 IF A<45 AND A>33 AND A<>38 AND A<>39
 AND A<>40 THEN X(A)=0
130 IF A<32 AND A>14 AND A<>19 AND A<>20
 AND A<>25 AND A<>26 AND A<>27 THEN X(A)
=1
140 NEXT A
145 FOR A=0 TO 14:X(A)=9:NEXT A
150 REM ***ACCEPT PLAYER'S MOVE***
```

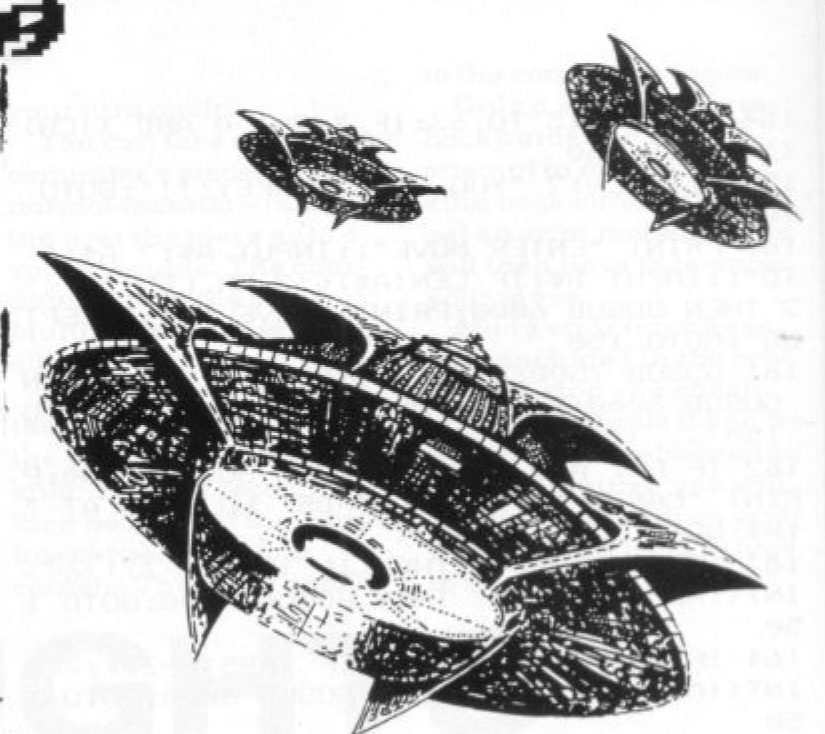
```
154 FOR CH=15 TO 63:IF X(CH)>0 AND X(CH)
<>9 THEN 160
155 NEXT CH:? "YOU LOSE TURKEY!!!":GOTO
10000
160 PRINT "ENTER MOVE";:INPUT A$:? A$;"
TO";:INPUT B$:IF LEN(A$)<>2 OR LEN(B$)<>
2 THEN GOSUB 6000:PRINT "MOVE NOT ACCEPT
ED":GOTO 150
161 GOSUB 7500:GOSUB 2010:IF X(P)<1 THEN
 GOSUB 6000:PRINT "NO PIECE AT ";A$:GOTO
 150
162 IF P>Z AND X(P)<>2 THEN GOSUB 6000:P
RINT "CAN'T MOVE BACKWARDS! NO KING AT "
;A$:GOTO 150
163 IF ABS(P-Z)=6 THEN IF (ABS(P-Z))/6<>
INT((ABS(P-Z)/6)) THEN GOSUB 6000:GOTO 1
50
164 IF ABS(P-Z)=7 THEN IF (ABS(P-Z))/7<>
INT((ABS(P-Z)/7)) THEN GOSUB 6000:GOTO 1
50
166 IF X(Z)<>0 THEN GOSUB 6000:PRINT B$;
" OCCUPIED":GOTO 150
169 IF ABS(P-Z)>7 THEN 171
170 GOTO 179
171 IF X(P+((Z-P)/2))>=0 THEN GOSUB 6000
:PRINT "NO PIECE TO TAKE":GOTO 150
172 X(P+((Z-P)/2))=0:TE=(P+((Z-P)/2)):FO
R TEST=1 TO 192 STEP 6:IF TE=VAL(M1$(TES
T,TEST+1)) THEN 175
173 NEXT TEST
174 GOTO 179
175 S1=VAL(M1$(TEST+2,TEST+3)):S2=VAL(M1
$(TEST+4,TEST+5)):COLOR 1:A=S1:B=S2:GOSU
B 2000:GOTO 179
179 X1=ASC(A$(1,1)):X2=ASC(B$(1,1))
180 X1=X1-64:X1=B(X1):X2=X2-64:X2=B(X2)
190 Y1=C(VAL(A$(2,2))):Y2=C(VAL(B$(2,2))
)
200 A=X1:B=Y1:COLOR 1:GOSUB 2000
210 A=X2:B=Y2:COLOR 2:GOSUB 2000
220 X(Z)=X(P):X(P)=0
230 IF Z>59 AND Z<64 THEN X(Z)=2
231 GOSUB 7000
300 GOTO 3000
2000 FOR UN=B-4 TO B:PLOT A,UN:DRAWTO A+
4,UN:NEXT UN:RETURN
2010 FOR WX=1 TO 128 STEP 4:IF A$=CH$(WX
,WX+1) THEN P=VAL(CH$(WX+2,WX+3)):GOTO 2
040
2020 NEXT WX
2040 FOR WX=1 TO 128 STEP 4:IF B$=CH$(WX
,WX+1) THEN Z=VAL(CH$(WX+2,WX+3)):GOTO 2
050
2045 NEXT WX
2050 RETURN
3000 FOR CH=15 TO 63:IF X(CH)<0 THEN 300
8
3001 NEXT CH:PRINT "YOU WIN BUSTER!":GOT
O 10000
3008 C=0:N=15
3009 IF X(N)>=0 THEN 3370
3010 FOR M=1 TO 2:IF X(N)=-2 AND X(N-M(M
))>0 AND X(N-2*M(M))=0 THEN 3410
3047 IF X(N+M(M))=0 THEN 3360
3048 IF X(N+M(M))=9 THEN 3360
3350 IF X(N+M(M))>0 AND X(N+2*M(M))=0 TH
EN 3390
3360 NEXT M
3370 N=N+1:IF N<=64 THEN 3009
3380 IF C=0 THEN 3500
3390 C=M(M):W=N+2*C:GOTO 3420
3410 C=-M(M):W=N+2*C
3420 X(W)=X(N):X(N)=0:X(N+C)=0
3430 FOR A1=1 TO 192 STEP 6:IF VAL(M1$(A
1,A1+1))=N THEN H1=VAL(M1$(A1+2,A1+3)):H
2=VAL(M1$(A1+4,A1+5)):GOTO 3450
3440 NEXT A1
3450 COLOR 1:A=H1:B=H2:GOSUB 2000
3451 FOR A1=1 TO 192 STEP 6:IF VAL(M1$(A
1,A1+1))=W THEN H1=VAL(M1$(A1+2,A1+3)):H
2=VAL(M1$(A1+4,A1+5)):GOTO 3470
3452 NEXT A1
3470 COLOR 3:A=H1:B=H2:F=H1:M=H2:GOSUB 2
000
3480 FOR A1=1 TO 192 STEP 6:IF VAL(M1$(A
1,A1+1))=(N+C) THEN H1=VAL(M1$(A1+2,A1+3
)):H2=VAL(M1$(A1+4,A1+5)):GOTO 3490
3481 NEXT A1
3490 COLOR 1:A=H1:B=H2:GOSUB 2000
3491 GOTO 5000
3500 FOR TR=1 TO 200
3501 X=INT(RND(1)*48)+15:IF X(X)>=0 THEN
 3600
3510 FOR M=1 TO 2:IF X(X+M(M))=0 THEN C=
M(M):GOTO 3650
3520 IF X(X)=-2 AND X(X-M(M))=0 AND X-M(
M)<64 THEN C=-M(M):GOTO 3650
3550 NEXT M
3600 NEXT TR:PRINT "I GIVE UP!":GOTO 100
00
3650 W=X+C:N=X:X(W)=X(N):X(X)=0
3700 FOR A1=1 TO 192 STEP 6:IF VAL(M1$(A
1,A1+1))=N THEN H1=VAL(M1$(A1+2,A1+3)):H
2=VAL(M1$(A1+4,A1+5)):GOTO 3800
3710 NEXT A1
3800 COLOR 1:A=H1:B=H2:GOSUB 2000
3900 FOR A1=1 TO 192 STEP 6:IF VAL(M1$(A
1,A1+1))=W THEN H1=VAL(M1$(A1+2,A1+3)):H
2=VAL(M1$(A1+4,A1+5)):GOTO 4000
3950 NEXT A1
4000 COLOR 3:A=H1:B=H2:F=H1:M=H2:GOSUB 2
000
5000 IF W>14 AND W<19 THEN X(W)=-2
5001 GOSUB 7050
5010 GOTO 150
6000 FOR I=1 TO 100:SOUND 0,36,36,36:NEX
T I:SOUND 0,0,0,0:RETURN
7000 IF X(Z)=2 THEN COLOR 3:PLOT A,B:DRA
WTO A+4,B-4:PLOT A+4,B:DRAWTO A,B-4
7010 RETURN
7050 IF X(W)=-2 THEN COLOR 2:PLOT F,M:DR
AWTO F+4,M-4:PLOT F+4,M:DRAWTO F,M-4
7060 RETURN
7500 IF ASC(A$)>72 OR ASC(B$)>72 OR VAL(
A$(2,2))>8 OR VAL(B$(2,2))>8 THEN PRINT
"COORDINATES DO NOT EXIST!!":GOTO 150
7510 RETURN
9999 END
10000 ? "PRESS START TO REPLAY"
10010 IF PEEK(53279)<>6 THEN 10010
10020 RUN
```





BY P. PHELBY

WITH EXTENDED BASIC & JOYSTICKS



Why is it that every time I go for a spin in my laser base hordes and hordes of aliens start bombarding me with missile fire.

Last week it was the Galaxeroids, before that the Solar Saucers, and now its the blasted Niveks.

And there's the Space Skins and the Pluto Punks – not that I mind them too much – they dress a bit weird and are hooked on Martian mushrooms but apart from that they keep themselves to themselves.

No – its the likes of the Niveks that annoy me – mindless space vandals each and every one. Last week, for example, me and a few other laser bases were watching our Space Sector quarter finals of the Intergalactic Cup when, two minutes before the end, the sky above the stadium was completely blacked out by a swarm of Niveks spitting missile fire down on to the pitch.

The refdroid appealed for a cease fire over the telescanner but the Niveks weren't interested in the Laserball anyway – it was sheer violence they were after. They could be the death of that game.

So as you enter keep one finger on the CTRL character keys marked below.

NIVEKS INVADERS

```
0 REM K.GOULDING        COPY RIGHT (C)
    6/6/82
1 GOSUB 3000
2 S=0
3 L=3
10 GRAPHICS 0
11 SETCOLOR 2,10,4
12 COLOR 18:PLOT 0,1:DRAWTO 39,1
13 L=L+1
15 COLOR 23:PLOT 2,20:DRAWTO 37,20
16 COLOR 24:PLOT 2,19:DRAWTO 38,19
20 POKE 752,1:POKE 755,4
30 A=L
40 C=0
50 D=20
60 POSITION 0,0:FOR I=1 TO A*2:? "=";:NE
XT I:? ">"
70 POSITION 26,0:? ""
80 FOR I=3 TO 38 STEP 3
90 POSITION I,2:? ""
95 NEXT I
100 FOR I=1 TO 33 STEP 2
110 FOR J=A TO A+6 STEP 2
120 POSITION I,J:? "w"
130 NEXT J
140 NEXT I
160 FOR I=0 TO 6 STEP 2
170 IF C=1 THEN 220
180 LOCATE 38,A+I,B
190 IF B<>32 THEN COLOR B:PLOT 38,A+I:PO
SITION 0,3:? "":POSITION 0,A+9:? "":A=A+
1:C=1:POSITION 0,A+I:? "~~"
195 IF B<>32 THEN POSITION A*2-3,0:? "
>"
200 POSITION 0,A+I:? " "
210 GOTO 250
220 LOCATE 2,A+I,B
230 IF B<>32 THEN COLOR B:PLOT 2,A+I:POS
ITION 0,3:? "":POSITION 0,A+9:? "":A=A+1
:C=0:POSITION 1,A+I:? "  "
235 IF B<>32 THEN POSITION A*2-3,0:? "
>"
240 POSITION 0,A+I:? "~"
250 IF RND(0)>0.95 AND I<6 THEN 2000
260 IF STRIG(0)=0 THEN GOSUB 500
265 K=K+1
270 IF STICK(0)=11 AND D>1 THEN D=D-1
273 POKE 19,D+3
275 IF STICK(0)=7 AND D<36 THEN D=D+1
280 POSITION D,22:? "   "
281 IF R=1 THEN 2030
282 F=F+1
283 IF F=4 THEN POKE 755,4
284 IF F=8 THEN F=0:POKE 755,0
285 IF A=13 THEN 1000
286 IF A=11 THEN SETCOLOR 2,3,3
287 IF A=8 THEN SETCOLOR 2,2,4
288 NEXT I
290 GOTO 160
500 REM  FIRING
505 IF K<3 THEN RETURN
507 K=0
510 COLOR 33
520 FOR J=21 TO 4 STEP -1
530 LOCATE D+1,J,G
540 SOUND 0,J,6,8
550 PLOT D+1,J
560 IF G<>32 THEN 600
570 NEXT J
600 REM
610 COLOR 32:PLOT D+1,21:DRAWTO D+1,J
615 IF G<>32 THEN FOR J=10 TO 100 STEP 1
0:SOUND 0,J+G,10,8:NEXT J
617 SOUND 0,0,0,0
620 IF G=119 THEN S=S+10
630 IF G=42 THEN R=0:S1=S1+100:IF P=119
THEN S=S+10
635 IF (G=119 OR G=42) AND S>0 AND S/680
=INT(S/680) THEN 10
640 RETURN
```

```
1000 REM  INVASION
1010 GRAPHICS 0
1015 SETCOLOR 2,0,0
1020 L=6+PEEK(741)+256*PEEK(742)
1030 POKE L+2,7:POKE L+5,6:POKE 752,1
1040 POKE 764,255
1050 POSITION 0,2
1060 ? "YOU'VE BEEN INVADED!"
1070 POSITION 20,4:? "the earth is doome
d."
1080 POSITION 0,6:? "YOUR SCORE IS ";S+S
1
1090 POSITION 0,8:? "DO YOU WANT ANOTHER
 GO (Y OR N)"
1110 GET #2,A
1120 IF A=89 THEN RUN
1130 IF A<>78 THEN ? "INPUT (Y OR N)":GO
TO 1110
1140 GRAPHICS 0:END
2000 REM SPACE ATTACK
2010 N=INT(RND(0)*13)*3:N1=N:M=3:M1=M
2020 R=1:P=32
2030 COLOR P:PLOT N1,M1
2035 IF M=19 THEN 2200
2040 LOCATE N,M,P:SOUND 1,M*10,10,8
2050 COLOR 42:PLOT N,M:N1=N:M1=M
2060 M=M+1
2070 N=N+INT(RND(0)*3)-1
2080 IF N<2 THEN N=2
2090 IF N>38 THEN N=38
2095 SOUND 1,0,0,0
2100 GOTO 260
2200 FOR V=19 TO 22
2210 COLOR 42
2220 IF N<5 OR N>34 THEN 2280
2222 PLOT N-(V-19),V:DRAWTO N+(V-19),V
2225 FOR X=1 TO 5:SOUND 1,X*9,10,8:NEXT
X
2230 NEXT V
2235 SOUND 1,0,0,0
2240 FOR V=19 TO 22
2250 COLOR 32
2260 PLOT N-(V-19),V:DRAWTO N+(V-19),V
2265 FOR X=1 TO 10:NEXT X
2270 NEXT V
2275 PLOT 0,0
2277 IF D>N-5 AND D<N+3 THEN 1000
2280 R=0:GOTO 260
3000 REM  RULES
3010 GRAPHICS 0:POKE 82,0
3020 POSITION 12,3:? "NIVEK'S INVADERS"
3030 POSITION 12,4:? ""
3040 POSITION 0,7:? "DO YOU WANT TO SEE
THE RULES (Y OR N)?"
3050 OPEN #2,6,0,"K:"
3060 GET #2,A
3070 IF A=78 THEN RETURN
3080 IF A<>89 THEN ? "INPUT (Y OR N)":GO
TO 3060
3090 GRAPHICS 0
3100 ? " THIS GAME IS LIKE SPACE INVADER
S BUT   THERE ARE SOME ";
3110 ? "DIFFERANCES.YOU HAVE TO  SHOOT A
LL THE 'w' SHAPED INVADERS";
3120 ? " BEFOREYOU GET DESTROYED"
3130 ? :? "THERE ARE 2 WAYS TO BE DESTRO
YED!"
3140 ? :? "1. GET HIT BY A '*'"
3150 ? "2. GET INVADED"
3160 ? :? :? "WHEN THE GAME STARTS,THERE
 IS AN ARROW"
3170 ? "AT THE TOP OF THE SCREEN.WHEN IT
 REACHES";
3180 ? "THE '' THEN YOU WILL BE INVADED!
!"
3190 ? "THE ARROW MOVES CLOSER TO THE ''
 EVERY"
3200 ? "TIME A 'w' HIT'S THE SIDE OF THE
 SCREEN"
3210 ? "AND CHANGES DIRECTION"
3220 ? :? "THE ''  REPRESENTS THE EARTH"
3230 ? "THE '>' REPRESENTS THE INVASION
FORCE"
3240 ? :? "PRESS SPACE BAR TO CONTINUE"
3250 GET #2,A
3260 GRAPHICS 0
3270 ? "THERE ARE SOME LARGE '' NEAR THE
 TOP"
3280 ? "OF THE SCREEN.THESE ARE THE MOTH
ER SHIPS"
3290 ? "THEY ALWAYS KEEP OUT OF YOUR RAN
GE"
3300 ? "AND IT IS THESE SHIPS WHICH INVA
DE YOU"
3320 ? :? "THE 'w' ARE WORTH 10  POINTS"
3330 ? "THE '*' ARE WORTH 100 POINTS"
3340 ? :? "BEFORE YOU CAN SHOOT THE INVA
DERS,"
```

94




```
3350 ? "YOU HAVE TO SHOOT THROUGH THEIR
BARRIERS";
3360 ? "JUST ABOVE YOUR BLASTER AT THE F
OOT OF"
3370 ? "THE SCREEN."
3380 ? :? :? "YOU HAVE ONLY 1 BLASTER SO
 BE CAREFUL"
3390 ? :? :? "PRESS THE SPACE BAR TO BEG
IN!"
3400 GET #2,A
3410 RETURN
```

COMMENTS ON PRINTOUT

```
LINE NO.

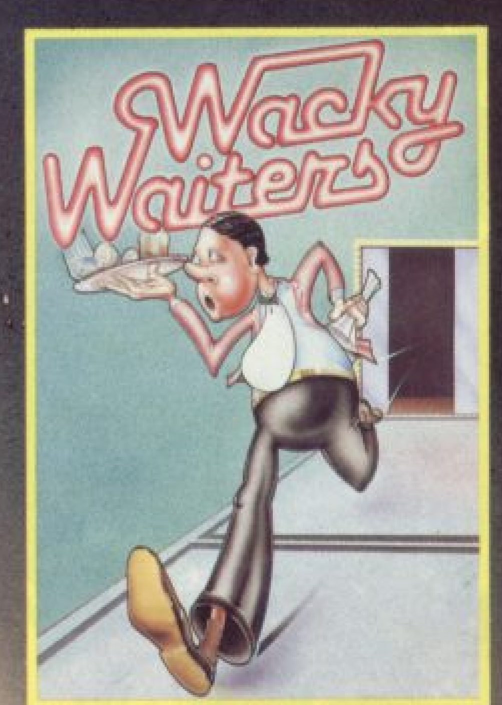
60 between 2nd quotes should be '[CTRL R]>'
70 between quotes should be '[CTRL T]'
90 between quotes should be '[CTRL F][CTRL G]'
190 between 1st quotes '[ESC SHIFT >]',2nd quotes'[ESC SHIFT DEL]'
    3rd quotes '[2 ESC CTRL DEL]'
195 between quotes should be '[2 SPACES][CTRL R]>'
200 between quotes should be '[ESC CTRL >]'
230 1st & 2nd quotes as line 190, 3rd quotes '[2 ESC CTRL >]'
235 as line 195
240 between quotes should be '[ESC CTRL DEL]'
280 between quotes should be '[SPACE][CTRL S][SPACE]'
500 'FIRING' should be in INVERSE VIDEO
1000 'INVASION' should be in INVERSE VIDEO
2000 'SPACE ATTACK' should be in INVERSE VIDEO
3000 'RULES' should be in INVERSE VIDEO
3030 between quotes should be '[16 CTRL R]'
3180 between ' ' should be '[CTRL T]'
3190 as line 3180
3220 as line 3180
3230 between ' ' should be '[CTRL R]>'
3270 between ' ' should be '[CTRL G][CTRL F]'

CTRL  = CONTROL KEY
DEL   = DELETE/BACK SPACE KEY
ESC   = ESCAPE KEY (push escape 1st then other keys simultaneously
SHIFT = SHIFT KEY
```

...senses coping?..



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...the name of the game

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BY K. WARDLE

RUNS ON A BBC MODEL A IN 16K

CATCH

The alien space craft swoops low over the planet. The captain is looking for a dropping zone for the passengers of his craft — a bunch of happy aliens on a day trip who didn't realise that when the tour-company said they would be dropped off somewhere they'd be dropped off on parachutes! Still you have to make the best of things and here come the day-trippers leaping out into the great unknown. The good news is that there's someone to meet them when they land — with a net to help break the fall . . .

Your job is to help catch the little chaps as they drop down toward the planet. You are armed with a net and are allowed just 12 misses before the space-trippers start worrying. The ship will gradually get lower as time goes on — so you'll have less time to catch the falling aliens. You can vary the speed of the ship, the rate of descent of the ship, and the speed the aliens whizz down toward you as you get better at the game.

The controls are simple; up=F1, down=F3, left=CRSRup/down, right=CRS left/right.

```
10 *TV255
20 *KEY1|MG.70|M
30 MODE7
40 VDU23;8202;0;0;0;
50 DIM T%(5)
60 PROCT
70 PROCS
80 REPEAT
90 REPEAT
100 PROCM
110 PROCW
120 PROCY
130 PROCM
140 PROCN
150 PROCZ
160 F%=F%+1
170 UNTILG%=0 OR F%=0%
180 IF G%<=0 THEN 250
190 F%=0
```



```
200 ?Z%=32
210 Z%=Z%+40
220 D%=D%+40
230 E%=E%+40
240 UNTIL 0
250 FOR A%=1 TO 25
260 SOUND3,-11,RND(155)+99,2
270 NEXT
280 END
290 DEFPROCM
300 *FX15,1
310 X%=Y%
320 IF INKEY(-55) THEN Y%=Y%-1:IF Y%<32625 THEN Y%=32625
330 IF INKEY(-56) THEN Y%=Y%+1:IF Y%>32661 THEN Y%=32661
340 ?X%=32
350 X%?2=32
360 ?Y%=245
370 Y%?1=240
380 Y%?2=250
390 ENDPROC
400 DEFPROCP
410 S%=0
420 FOR B%=1 TO 5
430 IF T%(B%)=0 THEN S%=B%:B%=5
440 NEXT
450 IF S%=0 THEN ENDPROC
460 T%(S%)=Z%+40
470 SOUND1,-10,43,2
480 ENDPROC
490 DEFPROCN
500 FOR B%=1 TO 5
510 IF T%(B%)=0 THEN 630
520 ?(T%(B%))=32
530 T%(B%)=T%(B%)+40
540 ?(T%(B%))=181
550 IF T%(B%)>32624 THEN PROCK(B%)
560 IF T%(B%)<32664 THEN 630
570 G%=G%-1
580 ?(T%(B%))=32
590 T%(B%)=0
600 SOUND0,-15,5,5
610 PRINTTAB(26,24);" ";G%;" ";
620 ?32704=(RND(7)+128)
630 NEXT
640 ENDPROC
650 DEFPROCY
660 B%=RND(Q%)
670 IF B%=4 THEN PROCP
680 ENDPROC
690 DEFPROCZ
700 B%=RND(20)
710 IF B%=8 THEN H%=-H%
720 IF Z%>E% THEN H%=-1
730 IF Z%<D% THEN H%=1
740 ?Z%=32
750 Z%=Z%+H%
760 IF H%=1 THEN ?Z%=185
```

Illustration: Dorian Cross

```
770 IF H%=-1 THEN ?Z%=230
780 ENDPROC
790 DEFPROCK(U%)
800 FOR A%=0 TO 2
810 IF Y%+A%<>T%(U%) THEN 870
820 K%=K%+1
830 SOUND2,-15,K%*2,3
840 T%(U%)=0
850 PRINTTAB(8,24);K%;
860 ?32624=(RND(7)+144)
870 NEXT
880 ENDPROC
890 DEFPROCW
900 AS%=TIME
910 REPEAT
920 UNTIL TIME>=AS%+I%
930 ENDPROC
940 DEFPROCS
950 CLS
960 FOR A%=1 TO 5
970 T%(A%)=0
980 NEXT
990 Z%=31794
1000 Y%=32640
1010 D%=31786
1020 E%=31822
1030 F%=0
1040 G%=12
1050 H%=1
1060 K%=0
1070 FOR A%=31744 TO 32664 STEP40
1080 ?A%=(RND(7)+144)
1090 NEXT
1100 ?Y%=245
1110 Y%?1=240
1120 T%?2=250
1130 PRINTTAB(1,24);"Score:";
1140 PRINTTAB(20,24);"Lives: ";G%;
1150 ENDPROC
1160 DEFPROCT
```

```
1170 PRINTTAB(14,7)CHR$131CHR$141"CATCH"
1180 PRINTTAB(14,8)CHR$131CHR$141"CATCH"
1190 J%=INKEY(500)
1200 CLS
1210 PRINT''CHR$130"In this game the objective is to"
1220 PRINTCHR$130"prevent the falling objects from"
1230 PRINTCHR$130"hitting the ground"'
1240 PRINTCHR$134"To do this you must catch them all"
1250 PRINTCHR$134"with your net.  To help you"
1260 PRINTCHR$134"in this task you are allowed 12"
1270 PRINTCHR$134"lives.  However, the plane dropping the";
1280 PRINTCHR$134"objects will decend as time goes on"'
1290 PRINT CHR$131"To move the net use the"
1300 PRINTCHR$131"following controls:"'
1310 PRINTCHR$129"P - right"
1320 PRINTCHR$129"O - left"'
1330 PRINTCHR$132"Press the red key"CHR$129"f1"CHR$132"at the end of a"
1340 PRINTCHR$132"game to restart"''
1350 PRINTCHR$136"Press any key to continue":g=GET
1360 CLS
1370 PRINT''''CHR$133"Enter the difficulty levels for:"
1380 PRINT''CHR$130"Plane decent  (1 - fast, to 3 - slow)"
1390 g%=GET
1400 g%=g%-48
1410 IF g%<1 OR g%>3 THEN 1390
1420 O%=20*g%
1430 PRINT''CHR$129"Speed  (0 - fast, to 4 - slow)"
1440 I%=GET
1450 I%=I%-48
1460 IF I%<0 OR I%>4 THEN 1440
1470 PRINT''CHR$131"Rate of drop  (1 - fast, to 4 - slow)"
1480 Q%=GET
1490 Q%=Q%-48
1500 IF Q%<1 OR Q%>4 THEN 1480
1510 Q%=Q%*4
1520 ENDPROC
```

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TRADE ENQUIRIES WELCOME.

CVG 07

```
0 REM
0 CLR:GOSUB1000
1 C=30720:SCR=7702
2 POKE36878,15:S0=36876:S1=36877:NR=4:HS=0
3 SK=0:PRINT"□LEVEL";:GETNR$:NR=VAL(NR$):IFNR<1
 ORNR>7ORNR<>INT(NR)THEN3
4 PRINT"□■SC";SK;TAB(10);"HI";HS
5 POKE36879,110
6 H(1)=4:H(2)=7:H(3)=3:H(4)=5:H(5)=0:H(6)=2:H(7)=1
10 FORK=SCRTOSCR+21:POKEK,58:POKEK+C,1:NEXT
11 FORK=SCRTO8164STEP22:POKEK,58:POKEK+C,1:NEXT
12 FORK=SCR+21TO8185STEP22:POKEK,58:POKEK+C,1:NEXT
13 FORK=8165TO8184:POKEK,58:POKEK+C,1:NEXT
14 FORK=1TONR
15 X(K)=INT(20*RND(1))+1:X(K)=SCR+(22*X(K))
16 Y(K)=INT(18*RND(1))+2
17 IFPEEK(X(K)+Y(K))<>32THEN15
18 POKEX(K)+Y(K),59:POKEX(K)+Y(K)+C,H(K)
19 NEXTK
20 FORK=1TO20
25 M=INT(440*RND(1))+7724:IFPEEK(M)<>32THEN25
30 POKEM,61:POKEM+C,2:NEXT
40 P=INT(20*RND(1))+1:P=SCR+(22*P)
50 Q=INT(18*RND(1))+2
60 IFPEEK(P+Q)<>32THEN50
70 POKEP+Q,60:POKEP+Q+C,0
71 X= 3:TI$="000000"
72 PRINT"■■■■■";X
73 IFTI$="000001"THENX=X-1:TI$="000000"
74 IFX=0THEN76
75 GOTO72
76 PRINT"■■■■■
80 PRINT"■■SC";SK;TAB(10);"HI";HS
90 X=PEEK(197):R=0:S=0
102 IFX=39THENR=-22:S=0
104 IFX=33THENS=-1:R=0
105 IFX=26THENS=1:R=0
107 IFX=47THENR=22:S=0
135 IFR=0ANDS=0THEN190
140 IFPEEK(P+Q+R+S)<>32THEN350
150 POKEP+Q,32
160 P=P+R:Q=Q+S
165 POKE198,0
180 POKEP+Q,60:POKEP+Q+C,0
190 FORK=1TONR:R=0:S=0:POKEX(K)+Y(K),32
200 IFP>X(K)THENS=22:GOTO240
210 IFP<X(K)THENS=-22:GOTO240
220 IFQ>Y(K)THENR=1:GOTO240
230 IFQ<Y(K)THENR=-1:GOTO240
240 IFPEEK(Y(K)+X(K)+R+S)<>32ANDPEEK(X(K)+Y(K)+S+R)<>60THEN360
245 QP=0
250 IFPEEK(Y(K)+X(K)+S+R)=32THENY(K)=Y(K)+R:X(K)=X(K)
 +S:POKEY(K)+X(K),59:QP=1
255 IFQP=1THENPOKEY(K)+X(K)+C,H(K):GOTO420
260 POKEY(K)+R+X(K)+S,42:POKES0,220:FORB=1TO1000:NEXT:POKES0,0
280 PRINT"□■■■■■■■GAME OVER"
300 IFSK>HSTHENHS=SK:PRINT"YOU BEAT THE HIGH"
310 PRINT"YOU SCORED ";SK
320 PRINT"■■■■■■■■■HIT ANY KEY"
330 POKE198,0:WAIT198,1
340 GOTO3
350 POKEP+Q+R,42:GOSUB2000:GOTO280
360 SK=SK+20:POKEY(K)+X(K),32:GOSUB2000:IFPEEK(Y(K)+X(K)+R+S)
 =61THENGOTO500
380 Y(K)=INT(18*RND(1))+1
390 X(K)=INT(20*RND(1))+1:X(K)=SCR+(22*X(K))
400 IFPEEK(X(K)+Y(K))<>32THEN380
410 POKEX(K)+Y(K),59:POKEX(K)+Y(K)+C,H(K)
420 NEXTK
430 GOTO80
500 POKE(Y(K)+X(K)+R+S),32
501 M=INT(440*RND(1))+7724:IFPEEK(M)<>32THEN501
502 POKEM,61:POKEM+C,2:GOTO380
1000 POKE51,255:POKE52,27:POKE55,255:POKE56,27
1010 FORK=0TO463:POKE7168+K,PEEK(32768+K):NEXTK
1015 FORK=7552TO7631:READA:POKEK,A:NEXT
1016 DATA126,126,102,102,102,102,126,126,56,56,24,24,24,24,60,60
1017 DATA126,126,6,126,126,96,126,126,126,126,6,126,126,6,126,126
1018 DATA96,96,108,108,126,126,12,12,126,126,96,126,126,6,126,126
1019 DATA126,126,96,126,126,102,126,126,126,126,102,12,24,48,48,48
1020 FORK=7632TO7663:READA:POKEK,A:NEXTK
1021 DATA126,126,102,126,126,102,126,126,126,126,102,126,126,6,126,126
1030 POKE36869,255:POKE36866,PEEK(36866)OR128
1035 RETURN
1040 DATA255,129,129,129,129,129,129,255,16,56,124,84,124,124,254,214
1050 DATA56,56,16,56,84,16,40,68,66,255,66,90,90,66,255,66
2000 FORG=1TO 50:POKES1,165:NEXT:POKES1,0
2010 RETURN
READY.
```

Illustration: Dorian Cross

BY MARK DAWSON

GHOST TRAP

You play a dangerous game when you go in search of man-eating ghosts — but the rewards are high!

Your aim is to lure the hungry ghosts into deadly laser traps. You'll be rewarded with 20 points.

Once in a trap the ghost will disappear — then the trap and a new ghost will appear in a different position on your screen. You must also steer clear of the traps.

There are seven skill levels all with varying speeds and numbers of ghosts to deal with.

The controls are; up=F1, down=F3, left=CRSR up/down, right=CRSR left/right.

RUNS ON A VIC-20 IN 3.5K



```
  10 CLS
  11 DIM A$(10,10)
  20 PRINT TAB 12;"ZAX""S V";TAB
 12;"▀▀▀▀▀▀▀"
  30 PRINT ,,,,"DO YOU WANT INST
RUCTIONS ?"
  40 INPUT B$
  50 GOSUB 7000
  60 IF B$="YES" THEN GOTO 8100
  70 LET LEVEL=0
  80 LET STRENGTH=1000
  90 LET FC=0
 100 LET COMPUTER=INT (RND*5)+1
 110 LET MACHINE=INT (RND*4)+2
 120 CLS
 130 PRINT "YOU ARE NOW BEING TR
ANSPORTED   TO ZAX""S V."
 140 LET LEVEL=LEVEL+1
 150 GOSUB 6000
 200 CLS
 205 IF STRENGTH<1 THEN GOTO 850
0
 210 FOR C=1 TO 10
 220 PRINT A$(C)
 230 NEXT C
 240 PRINT ,,"LEVEL:";LEVEL
 250 PRINT "STRENGTH:";STRENGTH
 255 IF HC=1 THEN PRINT "YOU HAV
E THE KEY"
 260 PRINT ,,"WHICH DIRECTION DO
 YOU WISH TO  GO."
 270 INPUT B$
 280 GOSUB 7050
 285 LET STRENGTH=STRENGTH-1
 290 LET A$(A,AA)="█"
 300 LET A=A+(A<>10 AND B$="SOUT
```



ZAX'S V

RUNS ON A SPECTRUM IN 16K

BY MARK LATTO

I was sitting in my office enjoying a large Pangalacticgargleblaster when the call came. I picked up the Visiviewer. It was the chief.

"I want you to go to the planet Zax's V and investigate a leak," he growled. "I'm no plumber," I replied. "Cut the wisecracks," he snarled. "Just listen. We've been getting reports from our man out on Zax that there's a double-agent operating — and he's selling Federation secrets to the Monotrons. Unfortunately it looks as if the Monotrons got to our man before he could find out the identity of the double agent. Now I want you to find out who this guy is and stop him — permanently."

"The only clue we have so far," the chief said, continuing his seemingly endless briefing, "is that the identity of the double agent is stored in the memory of a computer on the top storey of an office block in downtown Zaxville. That was the last message our man managed to get out before they bumped him off. OK, so now it's over to you . . ."

This is a graphics adventure which will have you baffled from some time. As the private-eye on the case your job is to get to the top of that five storey office block and discover the name of the double agent. Easy. Well, not quite. You may come across guards as you make your way towards the computer — and these are decidedly unfriendly.

Also, the only way to get from floor to floor is by lift. And these lifts are locked and barred. Before you can go up you must find the lift key in one of the five rooms on each floor. A time consuming task. Beware of the tasty looking snacks you may find in the rooms — no doubt left behind by the office workers. Some may have been poisoned by Monotron spies.

Once you manage to reach the top floor you'll find the computer Deep Throat ready to tell you the name of the double agent. Well, almost ready. It appears that the double agent has already been to the office before you — and has planted a bomb which you must defuse.

Full instructions for this exciting adventure in the underworld are included in the program. Here's looking at you kids . . .

Illustration: Dorian Cross



```
H") -(A<>1 AND B$="NORTH")
 310 LET AA=AA+(AA<>10 AND B$="E
AST")-(AA<>1 AND B$="WEST")
 320 LET C$=A$(A,AA)
 325 IF C$=" " THEN LET STRENGTH
=STRENGTH-25
 330 LET A$(A,AA)="▩"
 340 IF C$=" " OR C$="■" THEN GO
TO 200
 350 CLS
 360 IF C$="▩" THEN GOTO 2500
 370 IF LEVEL=MACHINE AND C$<>ST
R$ KEY AND FC=0 THEN GOTO 2000
 380 IF C$=STR$ KEY AND LEVEL<10
THEN GOSUB 3000
 390 IF LEVEL=10 AND C$=STR$ COM
PUTER THEN GOTO 3500
 400 IF VAL C$<>KEY THEN GOTO 50
0
 410 GOTO 200
 500 PRINT "YOU HAVE ENTERED ROO
M ";C$
 510 PRINT "ON LEVEL ";LEVEL
 520 LET D=INT (RND*10)+1
 530 IF D=1 THEN PRINT "THE ROOM
YOU ARE IN IS EMPTY     PRESS AN
Y KEY"
 550 IF D=1 AND INKEY$="" THEN G
OTO 550
 560 IF D=1 THEN GOTO 200
 570 GOTO 4500-3500*(D>7)-500*(D
<4)+1500*(D>3 AND D<6)+2000*(D=6
)
1000 PRINT "YOU HAVE ENTERED A R
OOM          CONTAINING FOOD.YOU
HAVE A       STRENGTH OF ";STRENG
TH
1020 LET D=INT (RND*3)+1
1030 IF D<>2 THEN LET B$="NOT PO
ISIONED"
1040 IF D=2 THEN LET B$="POISION
ED"
1050 IF RND>.8 THEN LET B$="POIS
IONED"
1060 IF RND>.8 THEN LET B$="NOT
POISIONED"
1070 IF FC=1 THEN PRINT "THE FOO
D MACHINE SAYS THAT THE  FOOD IS
 ";B$
1080 PRINT "DO YOU WANT TO RISK
EATING THE  FOOD."
1090 INPUT B$
1100 GOSUB 7000
1110 IF B$="NO" THEN GOTO 200
1120 IF D<>2 THEN PRINT "YOU ARE
 LUCKY THE FOOD WAS OK.  YOUR NE
W STRENGTH=";STRENGTH+100+100*(D
=3)
1130 IF D<>2 THEN LET STRENGTH=S
TRENGTH+100+100*(D=3)
1140 IF D<>2 THEN GOTO 1500
1150 PRINT "UGH...IT WAS POISION
ED."
1160 LET STRENGTH=STRENGTH-100-I
NT (RND*100)+5
1170 GOTO 1500
1500 FOR C=1 TO 350
1510 NEXT C
1520 GOTO 200
2000 PRINT "[illegible]
2010 PRINT ,,"YOU HAVE ENTERED A
 ROOM WHICH   CONTAINS A MACHINE
 WHICH IS     ABLE TO TELL IF FO
OD IS         POISIONED OR NOT.I
T IS ONLY     90 % ACURATE."
2020 LET FC=1
2040 GOTO 1500
2500 PRINT "[illegible]"
2510 PRINT "[illegible]"
2520 PRINT "[illegible]"
2530 PRINT "[illegible]"
2540 PRINT "[illegible]"
2550 PRINT "[illegible] LIFT [illegible]"
2560 FOR C=1 TO 7
2570 PRINT "[illegible]"
2580 NEXT C
2640 PRINT "[illegible]"
2650 PRINT "[illegible]"
2660 PRINT "[illegible]"
2670 PRINT "[illegible]"
2680 PRINT "[illegible]"
```

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```
2690 PRINT "YOU ARE AT THE LIFT
DO YOU HAVE THE KEY TO REMOVE TH
E BARS ?"
2700 INPUT B$
2710 GOSUB 7000
2720 IF B$="YES" AND HC=1 THEN G
OTO 140
2730 IF B$="YES" THEN PRINT AT 2
1,0;"NO YOU DON""T"
2740 LET A$(A,AA)="▒"
2745 LET STRENGTH=STRENGTH-100-I
NT (RND*300)
2750 LET A=A+1
2760 LET A$(A,AA)="▒"
2770 GOTO 200
3000 PRINT "[graphics characters]"
3010 PRINT AT 5,5;"YOU HAVE FOUN
D THE KEY"
3020 PRINT AT 7,5;"TO THE BARS A
CROSS THE"
3030 PRINT AT 9,5;"FRONT OF THE
LIFT."
3040 LET HC=1
3050 FOR C=1 TO 250
3060 NEXT C
3070 CLS
3080 RETURN
3500 PRINT "[graphics characters]"
3510 FOR D=1 TO 50
3520 PRINT AT 7,7;"▒▒▒▒";AT 10,7
;"▒▒▒▒";AT 8,8;"▒▒";AT 9,8;"▒▒"
3530 IF RND<.03 THEN GOTO 3600
3540 PRINT AT 7,7;"▒▒▒▒";AT 10,7
;"▒▒▒▒";AT 8,8;"▒.";AT 9,8;".▒"
3550 RAND RND
3560 NEXT D
3570 GOTO 3710
3600 FOR E=1 TO 4
3610 PRINT AT 12,7;"▒▒▒▒";AT 12,
6+E;"O"
3620 NEXT E
3630 PRINT AT 12,7;"▒▒▒▒"
3640 GOTO 3540
3710 CLS
3720 LET C$="(65536-(PEEK 16436+
(256*PEEK 16437))/50"
3730 FOR C=0 TO 9
3740 PRINT AT 11,C;C;AT C,11;C;A
T C,0;"▒▒▒▒▒▒▒▒▒▒"
3750 NEXT C
3760 LET D=INT (RND*9)
3770 LET E=INT (RND*9)
3780 POKE 16436,255
3790 POKE 16437,255
3800 PRINT AT 13,0;"DETONATION I
N ";300-VAL C$;" SECONDS"
3810 IF VAL C$>300 THEN GOTO 396
0
3820 INPUT B$
3830 IF LEN B$>2 OR B$(1)<"0" OR
 B$(1)>"9" OR B$(2)<"1" OR B$(2)
>"9" THEN GOTO 3820
3840 IF VAL B$(1)=D AND VAL B$(2
)=E THEN GOTO 3870
3850 PRINT AT VAL B$(2),VAL B$(1
);(INT ((ABS (VAL B$(2)-E)+ABS (
VAL B$(1)-D))/2))
3860 GOTO 3800
3870 LET D=INT (RND*100000)
3880 CLS
3890 PRINT "DETONATION IN ";300-
VAL C$;" SECONDS      "
3895 IF VAL C$>300 THEN GOTO 396
0
3900 PRINT "ENTER CODE NUMBER"
3910 INPUT B$
3920 IF B$>STR$ D THEN PRINT "LO
WER "
3930 IF B$<STR$ D THEN PRINT "HI
GHER"
3940 IF B$=STR$ D THEN GOTO 7100
3941 PRINT AT 0,0;
3950 GOTO 3890
3960 PRINT "YOU RAN OUT OF TIME
AND WERE      KILLED."
3970 GOTO 8500
4000 PRINT "[graphics characters]"
4010 PRINT AT 5,14;"YOU HAVE FOU
ND A";TAB 14;"ZOLTON GUARD";TAB
14;"GET READY TO ENTER";TAB 14;"
A NUMBER FROM";TAB 16;"(1 TO 5)"
4020 FOR C=1 TO 120
4030 NEXT C
4040 FOR C=1 TO INT (RND*6)+5
4050 LET D=INT (RND*5+1)
4060 IF RND>.1 THEN PRINT AT 12,
15;"HE DOES ";D
4070 POKE 16436,255
4080 POKE 16437,255
4090 IF INKEY$="" THEN GOTO 4090
4100 IF INKEY$<>STR$ D OR (65536
-(PEEK 16436+(256*PEEK 16437)))/
50>1.5 THEN LET STRENGTH=STRENGT
H-D*10
4110 NEXT C
4120 GOTO 200
4500 LET D=INT (RND*7+1)
4510 IF D<>7 THEN LET D=INT (RND
*7+1)
4520 IF D<>7 THEN GOTO 530
4530 PRINT "YOU HAVE ENTERED A R
OOM          CONTAINING A MATTER
TRANSPORTER."
4540 LET D=INT (RND*5)+1
4550 IF D+1=LEVEL THEN GOTO 4540
4560 LET LEVEL=D
4570 PRINT "YOU HAVE BEEN TRANSP
ORTED TO      LEVEL ";1+LEVEL
4580 GOTO 140
5000 LET C$=""
5010 LET D=INT (RND*5)
5011 LET C$=("WARLOCK" AND D=0)+
("CENTAUR" AND D=1)+("ROC" AND D
=2)+("GRYPHON" AND D=3)+("HYDRA"
 AND D=4)
5020 PRINT "YOU ARE FACED BY A "
;C$
5030 PRINT AT 10,0;"▒----------*--
------>▒"
5040 LET D=9
5050 LET E=INT (RND*3)+1
5060 INPUT B$
5070 IF VAL B$=E THEN LET D=D+2+
(RND>.5)
5080 IF D>19 THEN LET D=18
5090 IF VAL B$<>E THEN LET D=D-E
5100 IF D<0 THEN LET D=0
5110 PRINT AT 10,1;"------------
-----";AT 10,D;"*"
5120 IF D<>0 AND D<18 THEN GOTO
5050
5130 IF D=0 THEN LET STRENGTH=ST
RENGTH-50*E
5140 IF D>0 THEN PRINT "YOU HAVE
 DISTROYED THE ";C$
5150 GOTO 1500
6500 PRINT "YOU ARE UNDER ATTACK
 BY ROBO     GUARDS."
6501 PRINT "USE KEYS 5,8 AND 0"
6510 FOR C=1 TO 200
6511 NEXT C
6512 CLS
6515 LET S1=CODE " "
6520 LET A1=S1
6530 LET V1=A1=A1
6540 FOR C=V1 TO CODE "£" STEP .
05
6550 PRINT AT C,RND*CODE "?";" ▒
"
```

```
5560 LET A1=A1+(INKEY$="8")-(INK
EY$="5")
5570 IF A1<V1 THEN LET A1=V1
5580 IF INKEY$="0" THEN GOTO 666
0
5590 PRINT AT CODE "$",A1-V1;" I
"
5600 NEXT C
5610 LET STRENGTH=STRENGTH-100-I
NT (RND*100)
5620 PRINT "ONE OF THEM GOT YOU.
"
5630 GOTO 1500
5660 FOR D=11 TO C-CODE "■" STEP
 -V1
5670 PRINT AT D,A1;
5680 IF PEEK (PEEK 16398+256*PEE
K 16399)=CODE "■" THEN LET S1=S1
+5
5690 IF S1>155 THEN GOTO 1500
5700 PRINT AT D,A1;"""
5710 PRINT AT D,A1;" "
5720 NEXT D
5730 GOTO 6600
7000 IF B$="YES" OR B$="NO" THEN
 RETURN
7010 PRINT AT 21,0;"TYPE IN YES
OR NO"
7020 INPUT B$
7030 PRINT AT 21,0;"
"
7040 GOTO 7000
7050 IF B$="NORTH" OR B$="EAST"
OR B$="SOUTH" OR B$="WEST" THEN
RETURN
7060 PRINT AT 20,0;"TYPE IN NORT
H,SOUTH,EAST OR WEST"
7070 INPUT B$
7080 PRINT AT 20,0;"
                              "
7090 GOTO 7050
7100 CLS
7110 PRINT "YOU HAVE GAINED CONT
ROL OF THE  COMPUTER AND MADE IT
 PRINT OUT  THE INFORMATION YOU
NEED.THE    SPY YOU WANT IS ";
7120 FOR C=1 TO 100
7130 PRINT AT 3,16;"■";AT 3,16;"
"
7140 NEXT C
7150 PRINT
7160 PRINT ,,"STRENGTH:";STRENGT
H
7170 STOP
8000 LET A=5
8005 LET AA=1
8010 LET B=INT (RND*5+1)*100+164
14
8015 LET D=1
8016 LET E=1
8017 LET KEY=INT (RND*5+1)
8020 FOR C=B TO B+99
8030 LET A$(D,E)=CHR$ PEEK C
8040 LET E=E+1
8050 IF E=11 THEN LET D=D+1
8060 IF E=11 THEN LET E=1
8070 NEXT C
8080 LET A$(A,AA)="▒"
8085 LET HC=0
8090 RETURN
8100 CLS
8110 PRINT TAB 12;"ZAX""S V";TAB
 12;"======="
8115 PRINT "    YOU ARE A FEDERAT
ION LAW MAN YOUR JOB IS TO TRAVE
L TO THE     PLANET ZAX""S V AND
FIND OUT THE IDENTITY OF THE DOU
BLE AGENT WHOIS SELLING FEDERATI
ON SECRETS TOTHE MONOTRONS."
8120 PRINT "    THE IDENTITY OF T
HE AGENT IS HIDDEN ON THE TOP FL
OOR OF A 10 STORY BLOCK OF FLATS
.EACH FLOOR HAS FIVE ROOMS AND A
 LIFT ON IT."
```

```
8130 GOSUB 9000
8140 PRINT TAB 5;"KEY";TAB 5;"■■■
■"
8150 PRINT ,,"THE ROOMS......(1
TO 5)",,,"THE LIFT.......▒",,,"Y
OU...........▒",,,"THE PASSAGES
...▒"
8160 GOSUB 9000
8170 PRINT TAB 12;"THE LIFT";TAB
 12;"▀▀▀▀▀▀▀▀"
8180 PRINT ,,"    ACROSS THE FRON
T OF THE LIFT ARE SOME METAL BAR
S. ON EACH     LEVEL IS A KEY TO
REMOVE THE     BARS. THE BARS ARE
 ELECTRIFIED   SO TRY NOT TO GO P
ASSED THE LIFTWITHOUT THE KEY. O
NCE IN THE     LIFT YOU HAVE TO W
AIT 25 SECONDSFOR THE NEXTED FLO
OR TO BE MADE."
8190 GOSUB 9000
8200 PRINT TAB 9;"THE TOP FLOOR"
;TAB 9;"▀▀▀▀▀▀▀▀▀▀▀▀▀"
8210 PRINT ,,"    ON THE FLOOR IS
 A COMPUTER    WHICH WILL TELL YO
U THE AGENTS   NAME.BUT BEFORE YO
U GET THE NAMEYOU MUST DISARM A
BOMB.FIRST YOUMUST FIND THE BOMB
 ON A 10*10    GRID (THE LOWER TH
E NUMBER THE   NEARER YOU ARE).TH
EN YOU MUST    ENTER THE CODE NUM
BER."
8220 GOSUB 9000
8230 PRINT TAB 9;"ZOLTON GUARDS"
;TAB 9;"▀▀▀▀▀▀▀▀▀▀▀▀▀"
8240 PRINT ,,"    WHEN YOU ARE AT
TACKED BY A    ZOLTON GUARD THE G
UARD WILL DO   AN ACTION FROM 1 T
O 5 AND YOU    MUST PRESS THE SAM
E KEY TO       PROTECT YOUR SELF.
(YOU MUST BE   QUICK)."
8250 PRINT ,,"1.......HIT TO HEA
D","2......PUNCH BODY","3......
.STRIKE LEGS","4......CUT ARMS"
,"5......STAB WITH KNIFE"
8260 GOSUB 9000
8270 PRINT TAB 12;"MONSTERS";TAB
 12;"▀▀▀▀▀▀▀▀"
8280 PRINT ,,"WHEN YOU ARE SHOWN
 THE PICTURE   BELOW YOU MUST ENT
ER A NUMBER    FROM 1 TO 3.THIS M
OVES ALONG THEFIRE BALL",,,,"■--
-----*------>▒"
8290 PRINT ,,"■..........YOU",
"▒<...........THE MONSTER","*..
.........THE FIRE BALL"
8300 GOSUB 9000
8310 PRINT TAB 14;"FOOD";TAB 14;
"▀▀▀▀"
8320 PRINT ,,"YOU START OFF WITH
 A STRENGTH OF1000 AND CAN GET M
ORE BY EATING FOOD.BUT SOME OF T
HE FOOD YOU    WILL FIND IS POISI
ONED AND THIS WILL MAKE YOUR STR
ENGTH GO DOWN.IF YOU HAVE A STRE
NGTH OF 0 THENYOU LOSE."
8325 GOSUB 9000
8330 PRINT ,,TAB 13;"TUNNELS";TA
B 13;"▀▀▀▀▀▀▀"
8340 PRINT ,,"YOU CAN DIG TUNNEL
S BUT THIS     USES UP SOME STREN
GTH(NOT MUCH)."
8345 PRINT ,,TAB 11;"GOOD LUCK"
8350 GOSUB 9000
8360 GOTO 70
8500 PRINT "YOU HAVE A STRENGTH
OF 0.          YOU HAVE DIED WHILE
ON THE         MISSION.YOU HAVE FAI
LED.           YOU REACHED LEVEL:";
LEVEL
8510 IF LEVEL<9 THEN PRINT "ONLY
 ";10-LEVEL;" FLOORS TO GO."
8520 STOP
9000 PRINT ,,,,"      PRESS ANY KEY
 TO CONTINUE"
9010 IF INKEY$<>"" THEN GOTO 901
0
9020 IF INKEY$="" THEN GOTO 9020
9030 CLS
9040 CLS
9050 RETURN
```



If you want to know which computer to buy, ask your expert.

You knew it would happen some day. Some day, your child would become smarter than you.

What you didn't expect was that it would happen so soon. To you, computers are a mystery from the future.

But to your children, they are a real source of excitement. And they're happening now.

THE FIRST FAMILY COMPUTER.

So what will this young expert say when you ask which computer to buy? First, make sure that you have sufficient power for your needs. That your computer is easy to learn, and easy to use. And that it has a challenging, entertaining and expanding range of software.

The Dragon 32 is the first computer specifically designed for the family. And as such, we feel that it meets even our young expert's stringent criteria.

The Dragon offers a truly massive 32K RAM memory - harnessed by the advanced 6809E microprocessor. This is quite simply more than you're ever likely to need - but it does mean that your computer's capabilities can respond to your increasing ability as you learn your way around.

And how quickly you'll learn. The Dragon's easy-to-follow instruction manual helps. But what will really get you going is the fact that you'll be enjoying every minute.

And when it comes to ease of use, the Dragon's professional-quality keyboard makes your computer as familiar as a typewriter.

SOFTWARE TO MATCH.

Dragon software offers a great range of games - but that's not all. You'll find educational programs. Programs to help you plan your money. Even programs which teach you how to program.

And whether you're playing or working, you'll be learning more and more about this increasingly important new technology.

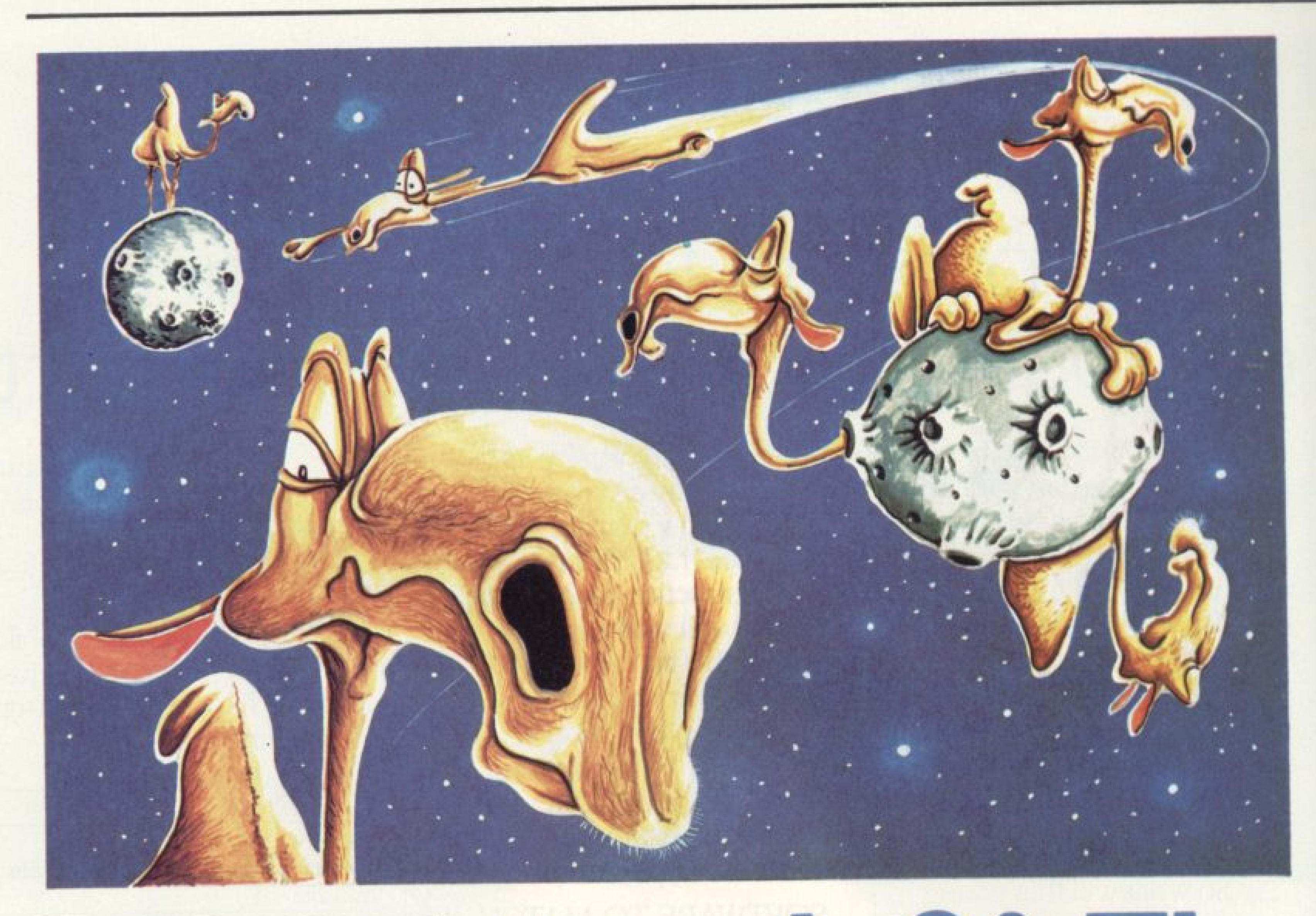
The Dragon 32 costs just £175.00.* For that, you get all the features that your child could ask for - which means just one thing. It's a very grown-up computer indeed.

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DRAGON 32
The first family computer.



Short of ideas for games? Then why not try to pick the brains of science fiction authors. *C&VG*'s very own sci-fi author, David Langford is back in action this month, suggesting books which might provide ideas as well as coming up with an unusual Tandy listing. Read-on as, through the customary Langford humour, a stellar horror rears its ugly head in the . . .

Attack Of The Galactic

Looking at computer games from the weird and twisted viewpoint of a science fiction writer has now resulted in a camel. Why a camel? Ahh, be patient, be patient.

SF authors are traditionally fond of mathematical or scientific tricks and games — anything to baffle and amaze the readers. In the last year I've had an overdose of the traditional physics of space travel and supernovae and black holes, thanks to writing reams about these things for two novels. But you don't see so much pure mathematics in SF.

Of course there are exceptions. Rudy Rucker's *White Light* is a novel all about mathematical infinity, full of peculiar number-theory jokes. At one point the hero has to open a combination lock whose code number is *pi*, and he stands there entering the digits 3.14159265358979 . . . and so on all the way to infinity!

Piers Anthony keeps sticking mathematical ideas into his oversized SF novels — the worst outbreak being in *OX*, which tries ineffectively to use the game of "Life" as a plot device, to the bafflement of most readers. And writers like Barrington Bayley and Jorge Luis Borges are very fond of boggling you with strange mathematical philosophies.

Borges' *The Book of Sand* features a book with an infinite number of pages, while Bayley's *The Radius Riders* proves conclusively that there's more space inside the Earth than there is outside.

Some mathematical problems are deceptively simple. The famous four-colour problem was to prove that any map you draw can be coloured, using no more than four colours, so that no two adjacent countries on the map are coloured the same. Sounds simple. The 1976 proof ran to 900 pages and

Camels!

needed 1500 hours of computer time!

But why a camel? I'm coming to that! Another simple-seeming puzzle is known as the travelling salesman problem: you can vary it from country to country but it's usually put like this.

A salesman wants to tour the USA by the shortest route which visits the capital city of every state. What route should he take?

This one tends to surprise people by erupting into much bigger numbers than expected, and you find that computers would require endless years to examine all the possible routes. (My calculator says 3×10^{64} routes for 50 cities. Work that out assuming the computer considers one a second, or one a nanosecond.)

However, you always knew you were brighter than a computer, and this is where the camels come in. When you key in this simple game program, camels start appearing about the screen, and by use of the arrow keys you steer a rather disgusting caterpillar-like ship into collisions which wipe out the galactic camels one by one.

If your lightning brain is up to it, you should be able to pick efficient camel-destroying routes which waste minimum time. For every second you waste allows more camels to appear from the sinister depths of the hyperspatial deserts.

Naturally, as this is a cruel universe we live in, it doesn't stay that easy. From time to time, Galactic Pest Control checks up on you to make sure you're doing your job of keeping the camels down. If their scan reveals more than about 12 camels at large in the universe, you're ignominiously pensioned off.

Life after surviving these checkups is still no bed of roses, since after each Galactic Pest Control scan the vile camels start breeding a little faster.

In the end, as with Space Invaders and many another game, you'll go under. But how hugely can you score first?

The listing is for a TRS-80 Model 1 Level II, as usual. (I was going to buy a Spectrum, but when I poked the keys it felt just like squashing small dead sea creatures, and I fled screaming.) It doesn't have to be treated as a perfect and polished program, and can be tinkered with as much as you like.

A few examples: Prefer boring old space invaders to my fresh, exciting, vibrant camels? Then alter the graphics in line 40 — say to CHR$(166) + CHR$(167) + CHR$(132).

Want the camels to appear less frequently to begin with? Give KC in line 110 to a bigger value.

Want Galactic Pest Control to check up more often, or less? The 0.03 in line 370 is the probability that wiping out any given camel will trigger a Galatic Pest Control scan.

Want to alter the Permitted Number Of Camels Left On screen? The current figure allowed is the 12 in line 2060.

Do the camels eventually start coming too ridiculously fast for you? The 10 in line 2080 is the minimum number of game cycles between camel appearances, and you can easily substitute a bigger number. (A game cycle is the time taken for the "ship" to move one unit.)

Want to rewrite the game so totally and brilliantly that my own puny efforts will be shown up for the empty, worthless stuff that they are? OK, but you're on your own!

A version of this "travelling salesman" problem appears — quite irrelevantly — in connection with star travel in Robert Heinlein's latest effort *Friday.* The book is however rather low on camels.

Why camels? I thought you'd never ask. Because, er, because — no, I'm sorry. Another of the things you learn from science fiction is that There Are Riddles Of The Universe Which Mankind Can Never Hope To Solve.

Interstellar travel and galactic camels are among these.

```
1 ' CAMEL INVADERS copyright (C) David Langford 1983
2 '
10 ' Set up display, titles, etc.
20 DEFINT A-Z
30 RANDOM
40 C$=CHR$(158)+CHR$(173)+CHR$(129) ' "Camel" graphics
50 CLS:PRINT@406,"CAMEL INVADERS":FORI=1TO2000:NEXT
60 PRINT@156,C$
70 PRINT@640,"YOUR MISSION - TO SAVE THE UNIVERSE FROM DREAD MARAUDING CAMELS!
80 PRINT:PRINT"USE ARROW KEYS TO STEER YOUR MIGHTY RAMSHIP ON COLLISION COURSE!
90 FORI=1TO5000:NEXT
100 CLS
110 KC=25 ' Delay between camel appearances
120 FORI=0TO127:SET(I,3):SET(I,47):NEXT
130 FORI=4TO46:SET(0,I):SET(127,I):NEXT ' Screen borders
200 ' Randomize initial "ship" position and movement
210 X=10+RND(110):Y=10+RND(30):X2=0:X3=0:Y2=0:Y3=0:K=0:S=0
220 DX=0:DY=0:ONRND(4)GOTO230,240,250,260
230 DX=1:GOTO310
240 DX=-1:GOTO310
250 DY=1:GOTO310
260 DY=-1
300 ' Run game
310 K=K+1:IFK<KCTHEN320ELSEPRINT@67+RND(55)+64*RND(13),C$;:K=0
320 X3=X2:Y3=Y2:Y2=Y:X2=X:X=X+DX:Y=Y+DY
330 IFX<1ORX>126ORY<4ORY>46THEN1010ELSEIFX=X3ANDY=Y3THEN380
340 IFNOTPOINT(X,Y)THEN380
350 PRINT@X/2-2+64*INT(Y/3),"    ",
360 S=S+1:PRINT@0,"YOUR SCORE IS";S;"EXPLODED CAMELS!";CHR$(205);
370 IFRND(0)<0.03THEN2010 ' Decide whether to count camels!
380 SET(X,Y):RESET(X3,Y3)
390 A$=INKEY$:IFA$=""THEN310ELSEA=ASC(A$)
400 IFA=91THENA=11ELSEIFA>10ORA<8THEN310
410 ONA-7GOTO420,430,440,450
420 DX=-1:DY=0:GOTO310
430 DX=1:DY=0:GOTO310
440 DX=0:DY=1:GOTO310
450 DX=0:DY=-1:GOTO310
1000 ' End if ship hits edge of universe
1010 PRINT@0,"MISSION ABORTED",:IFS=0THENPRINT" BEFORE EVER BEGINNING!",ELSEPRIN
T" WITH ONLY"S"CAMELS DETONATED!",
1020 RESET(X,Y):FORI=1TO40:NEXT:SET(X,Y):FORI=1TO40:NEXT
1030 IFINKEY$=" "THEN100ELSE1020
2000 ' Scan at random for excess camel population
2010 PRINT@0,C$," GALACTIC CAMEL SCAN!";CHR$(220);
2020 CC=-25
2030 FORI=15489TO16318
2040 IFPEEK(I)>128THENCC=CC+1
2050 NEXTI
2060 IFCC/3>12THEN3010
2070 PRINT@0,"YOU'RE DOING FINE - BUT THEY'RE SPEEDING UP!",
2080 IFKC>10THENKC=KC-1
2090 FORI=1TO1000:NEXT
2100 GOTO380
3000 ' End if too many camels .
3010 PRINT@409,"HARD LUCK!";:FORI=1TO2000:NEXT
3020 PRINT@640,"YOU HAVE BEEN OVERWHELMED AT LAST BY COLOSSAL HORDES OF CAMELS!!
"
3030 PRINT
3040 PRINT"YOUR FINAL CAMEL-BUSTING SCORE WAS";S+1
4000 ' Restart
4010 PRINT@972,"***  PRESS SPACE BAR TO TRY AGAIN  ***";
4020 FORI=1TO10:NEXT:PRINT@972,CHR$(231);
4030 FORI=1TO10:NEXT
4040 IFINKEY$=" "THEN100ELSE4010
```

Illustration: Dorian Cross

SOFTWARE FOR THE BBC, SINCLAIR ZX81/SPECTRUM & NEW BRAIN

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Have you ever bought a program that failed to live up to its promises?

Worse still a computer which defied the advertisement copy and refused to reveal its secrets...even refused to turn up for four months.

Computer people are traditionally slow to complain, they expect to be kept waiting and they've been reared on promises and launch dates that turned into "early production difficulties" and distribution problems".

But the *C&VG* postbag is gradually swelling with complaints from readers and the feeling is that while most computer manufacturers are now making an effort not to mislead prospective purchasers, some software houses are still not living up to their promises.

Sooner or later the wheat will be sorted from the chaff but to speed that day along, *C&VG* is going to come down hard on cassettes and cartridges which are not up to standard.

But we need your help. If you have bought anything from the computer industry which has really made you angry then put your thoughts on paper.

The column is titled "Great Software Disasters" but you can write in about computers (as Keith Ollett has done this month) peripherals, computer books, or anything which has angered you.

For further details on how to make your views felt read the panel below.

It may sound as though Great Software Disasters is going to be the most destructive page so far unleashed on the computer industry. But my hope is that it will be welcomed by: those software houses who are striving to keep quality high.

Those who have confessed to me in quiet corners that they do release the odd bad game because they know some unscrupulous rival would make a fortune from it if they turned it away.

Those manufacturers who believe bad software or peripherals reflect on their computer.

And those of you who have suffered.

Aeilric Bloodaxe is a delightful way to start off this column, because it tempers some hard-hitting criticism with humour and the feeling that Keith is going to end up very close to Aeilric in the end.

Oric too deserve credit for their positive response to the piece and the help they have since offered Keith.

If you have a genuine grievance about any computer industry product write in to Great Software Disasters, *Computer & Video Games*, Durrant House, Herbal Hill London EC1R 5JB.

We can only publish your comments if you give us a name and full address. A phone number may help and the offending tape or article despatched will enable us to test it for ourselves but this is not necessary.

We insist that the criticised company be given a chance to reply to the criticism before we publish.

Illustration by Jon Davis

The Blooding Of AEILRIC BLOODAXE

OR LEARNING TO LIVE WITH AN ORIC

Ernest Peabrain was a ZX81, he lasted about four months, changed his name to Beanbrain when he was expanded to 4K and is on permanent sabbatical leave giving novices Hands On Experience. I never ask what he gets out of it.

Jezebel came next, a 48K Sharp MZ-80K, she has lasted about 16 months. Hers is the keyboard I know best, for all its clatter. At the last count, I had about six Basic dialects and three Forth. Jezebel has everything I want from a computer except a decent keyboard, colour and three channel sound.

I admit I was beguiled by the Oric ads, the teaser articles in the computer press merely heated my ardour. Be still my dancing pulse! So, in late October, I ordered one. Well, the royalties Jezebel had earnt me would pay for it.

In calmer moments, I mused on the long and honourable pedigree of Tangerine, no new hot shot outfit this, sound expertise I thought, sound financial backing, I thought.

By now, your ears will have been filled with the woeful tales of those who are Waiting for Oric. The sleepless nights, the phone engaged for days on end, the bedwetting, the eternal promise of delivery next week, the damnable "Fur Elise" everytime the Oric switchboard put me on Hold.

Friends jeered at me in the street, "Has Eric arrived yet?" I lost my appetite, stopped shaving, wore the same tie two days in a row, my work was suffering.

On February 19th, Eric arrived. The time since then has not been dull. Because of the placid and predictable nature of the Oric Extended Basic (v 1.0), Eric was soon changed to Aeilric Boodaxe, somehow the name seems more appropriate.

It is my firm opinion that those who produce user manuals without indexes should be smothered at birth, or at least debarred from the company of honest and trusting folk. Compassion for the less privileged forbids me from offering an opinion on those who punctuate manuals with infantile and unhelpful cartoons. Two sheets of errata accompanied the manuals.

The machine itself is a sturdy thing, not unpleasing to the eye, which makes it both useful and decorative. The keyboard has an unique feel (tactile feedback) and is optionally noisy; sadly, some keys are marred by a tendency to remain depressed.

From cold start or power on or whatever, you eventually get a little message that tells you that you have ORIC EXTENDED BASIC V1.0 and there are 47870 BYTES FREE; if you enter PRINT FRE(0), you get 39421, which I am assured is the amount of memory available in bytes; but if you enter GRAB followed by PRINT FRE(0) you still only get 46588 bytes free and I thought this was supposed to be a 48K machine (which, according to my abacus, is 49152 bytes). Someone has been misled.

It is a sad comment on Life or Death or something, that the April issues of some computer magazines are still carrying advertisements which promise 16 colours on a 16K machine delivered in 28 days and while I'm at it, is it honest to describe 240 x 200 pixels as high resolution?

Oric Basic is an idiosyncratic little dialect, related on the distaff side to Microsoft. In some respects it is a lazy and sensuous thing, it does not insist on LET for variables, or arrays of less than 10 to be DIMmed, and will quite happily accept PRINTing without semicolons.

You may have read that PLOT replaces PRINT AT but this is not so.

PLOT is a viper of a command which will creep into your tent if you let it.

It is not easy to predict in which of the eight colours it will print a string, unless it is numeric, then it will be any colour you like (as long as you like green).

The STR$ command is a joy and a delight. Get it to produce a string from an integer between 1 and 9 and it will produce a string two characters long! The first character being the deceitful CHR$(2) and the second your precious number, even if you prune off the deceitful CHR$, you will still turn green when you PLOT. Could a mere BEEB boast such sophistication?

Getting Aeilric to produce all eight colours of foreground and background AND use double height and flashing characters is a challenge to the intellect perhaps equalled only to playing Towers of Hanoi while blindfolded and wearing boxing gloves.

Incidentally, the Oric does not boast the full Teletext Alphamosaic character set. WARNING: Teethmarks on the casing may invalidate the guarantee.

The SOUND, MUSIC and PLAY commands offer great scope for investigation. The *Sound* chapter of the manual is one of the more Byzantine chapters, omitting to give any examples of the SOUND command.

Although there are three music channels spanning a magnificent six octaves it is not easy to get each music channel to do something different to the other two. Well, actually you **can** get it to do this once or twice, but you might be better employed with the screen display or playing Towers of Hanoi than attempting a three part arrangement of *Jesu, Joy of Man's Desiring.*

Which is a pity, as I was looking forward to it. The on-board loudspeaker was very loud and turned the screen into porridge whenever it ZAPped or PINGed, sadly it turned dumb after three days, but it still blasts away through the Hi-Fi and I can control the volume on that.

There is a current fashion for neat pot Basic (i.e. Structured Basic) as opposed to shambler Basic (what I write). There is a whole chapter devoted to this in the manual. Somehow I feel they would have been better employed compiling an index. Structure is fine if you have a BEEB or an MZ-80K with Hudson MegaBasic, but if your line length is restricted to around 80 characters you will be hardpushed to produce a sizeable program which is truly structured and running efficiently.

I still maintain that the most useful programming tool is a large piece of paper and a pencil with a rubber on the end of it. It will be interesting to see the promised BBC-type Basic, will it be a true Structured Basic or just a less hastily produced Microsoft type perhaps with WHILE WEND.

There are a number of reserved words buried in the Basic but not mentioned in the manual, one begins JO and an INVERSE lurks in there somewhere.

The omission of VERIFY is almost criminal, given Aeilric's unreliability when saving programs even at 300 baud (super safe), and the lack of file writing reading commands will surely place immense restrictions on its applications.

I am frankly disappointed in the Oric. Its Basic seems a hastily produced thing, as is the manual. The advertising and brochures have been misleading and at times dishonest. The telesales staff have had to spend months covering for this ill-conceived product by promising delivery soon.

I could not in honesty recommend this machine to a beginner and an experienced user would be better advised to buy a more thoughtfully produced and supported product, even if he or she would have to buy a decent keyboard, or save up for something further up market.

CRI DE COEUR: Is there a manufacturer of popular home computers capable of honest publicity and realistic delivery dates?

Dear Mr Ollett
I'm glad to say that things have changed since you wrote your piece about Aeilric no delivery problems and the manual is improved too (not least by the addition of an index).

Oric have asked us to suggest that the best way of dealing with the problems you are experiencing is to make an appointment to see sales director Peter Harding. Now that they have closed down the mail order operation, you'll find it is child's play getting through to them. Just in case you need reminding the number is Ascot 27686 or 27575.

If anyone else has Oric problems, please send the machines back to Oric (if purchased from them) for servicing (PO Box 162 Cambridge CB4 1PH) — obviously this only applies to mail order customers. Anyone with a fault on an Oric bought in a shop should sent it or take it back to where it was purchased with the request that it is tested by that company's experts and, if necessary, returned to Oric via them.

Our thanks for cheering up post-opening time, Mr Ollett we do hope you come to love and enjoy Aeilric Bloodaxe.

Judith Patten.
On behalf of Oric.



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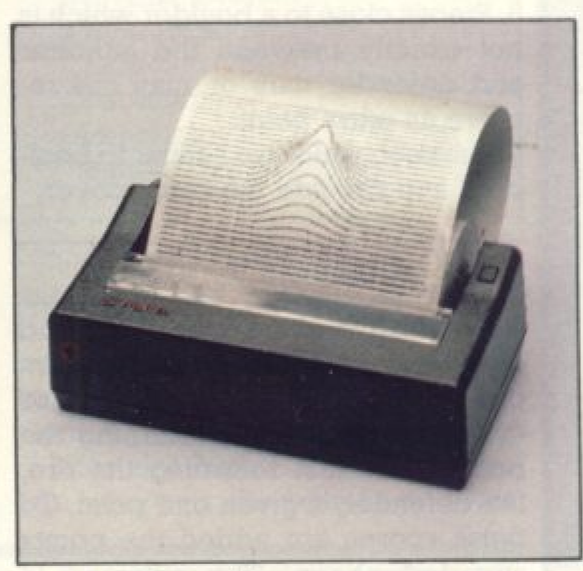
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RULES OF COMBAT

Prior to combat, the attacker and defender are awarded points.

1. They are allocated points as described in Part 2, including points for being adjacent to the General.
2. Pieces behind a boulder are awarded an extra point at the three hex range.
3. Pieces close to a boulder which is not exactly between the attacker and defender may or may not receive an extra point.
4. Garrison walls are similar to boulders and provide the same cover.

COMBAT TABLE

To determine the outcome, the computer selects a number from one to six for the attacker and for the defender if he is returning the fire. If he is not returning the fire, the defender is given one point. To these scores are added the points awarded above. The outcome is shown in the table.

DEFENDER ELIMINATED:	Attacker scores more than 5.
ATTACKER ELIMINATED:	Defender scores more than 5.
DEFENDER RETREATS:	Attacker scores 4 or 5, defender scores less.
ATTACKER RETREATS:	Defender scores 4 or 5, attacker scores less.
BOTH MISS:	Any other scores.

OUTCOMES

A-RET:- The attacker is forced to retreat 1 hex away from the direction of the defender. The directions in which the attacker may move are shown at the bottom of the screen. If none is available, the attacker is eliminated automatically.

If the combat was at 1 hex range, the defender will flicker "ADV". If "Y" is pressed, he may move into the hex vacated by the attacker. The following rules apply with regard to the Flag:

1) If the attacker occupies the Flag hex, he must retreat without the Flag.

2) The defender may advance into the empty Flag hex. This must be a winning condition since only an Indian may advance into the Flag hex.

3) The General or a Trooper may retreat into the Flag hex; Indians may not.

4) The man occupying the Flag hex may advance with the Flag.

A-ELM:- The attacker is eliminated and removed from the map. The defender may advance as described above.

BOTH:- The attacker and the defender are removed from the map.

D-RET:- The defender is forced to retreat as described above and the attacker may advance.

D-ELM:- The defender is eliminated and removed from the map. The attacker may advance.

This completes the rules.

WARPATH PART 7 — COMBAT

```
20 IFTQ<3THENJ=1ELSEJ=5*(TQ-2)+1
30 FORI=J+1TOJ+4:PRINT@SP,D(I);:GOSUB510:NEXT:PRINT@SP,D;:RETURN
40 X=PEEK(PK+7):X=X+X2*(3*(X>3)-3*(X<4)):RETURN
50 KB(Y)=BL:KS(Y)=SP:KT(Y)=TP:G(Y)=FL:KV(Y)=V3:KQ(Y)=Q9:RETURN
60 SV(TQ)=SV(TQ)-1
110 I=0:IF(X<>X(0))AND(X<>X(1))AND(X<>X(2))THENI=1:RETURNELSERET
URN
150 FORII=TBTOTB+PEEK(TB)-1STEP7:PRINT@PEEK(II+1)*256+PEEK(II+2)
+4,CHR$(128);:NEXT:RETURN
170 GOSUB250:GOSUB410:TQ=TP:GOSUB20:GOSUB400:POKEV3,Z:PC(MN,0)=0
:GOTO60
180 Y=1:GOSUB50:BL=PC(TD,0):V3=BD+BL:SP=PEEK(PK+1)*256+PEEK(PK+2
):TP=PC(TD,1):GOSUB160:Y=0:GOTO50
200 GOSUB40:X(1)=X:X(0)=X(1)-1:IFX(0)=0THENX(0)=6
210 X(2)=X(1)+1:IFX(2)=7THENX(2)=1
220 J=0:FORI=0TO2:X=X(I):GOSUB500:IF(NX<>Z)OR((RE>3)AND(PL=0)AND
(NB=SF))OR((RE<3)ANDPLAND(NB=SF))THENX(I)=-1:J=J+1:NEXTELSEL=X:N
EXT
230 IFJ=3THENPRINT@896,"NO RETREAT"CHR$(30);:GOSUB340:RETURNELSE
G="RET":PRINT@896,"DIRECTION"CHR$(30);:FORI=0TO2:IFX(I)<0THENNEX
TELSEPRINTX(I);:NEXT
240 RETURN
250 BL=KB(Y):SP=KS(Y):TP=KT(Y):FL=G(Y):V3=KV(Y):Q9=KQ(Y):RETURN
280 N(Y)=-(KT(Y)=4)-(PC(MN,1)=3)-(PEEK(PK+6)=3)*(PEEK(PK+4-Y)):I
FMN<26THEN300ELSEFORX=1TO6:GOSUB500:IF(NX<51)THENIFPC(NX,1)=5THE
NN(Y)=N(Y)+1
290 NEXT
300 PRINT@896+64*Y,E(Y);N(Y);"POINT(S)";:N(Y)=N(Y)+RND(6):RETURN
350 MN=K:Y=1:RETURN
360 MN=TD:Y=0:RETURN
1230 GOSUB410:POKESK,K:U=SS:P=SP:GOSUB190:U=SB:P=BL:GOSUB190:U=1
6526:P=B7:GOSUB190:K9=USR(0):IFPEEK(TB)=0THENRETURN
1240 K7=0:FORI=TBTOTB+PEEK(TB)-1STEP7:K7=K7-(PEEK(I+6)=1):NEXT:I
FK7=0ANDPC(K,1)=2THENRETURN
1250 K6=0:L2=0:TP=PC(K,1):GOSUB160:L=65:FORI=TBTOTB+PEEK(TB)-1ST
EP7
1260 IF((K7ORTP=2)ANDPEEK(I+6)<>1)OR(PC(PEEK(I+5),1)=6)THENK6=K6
+1:POKEI+5,0:GOTO1280
1270 PRINT@PEEK(I+1)*256+PEEK(I+2)+4,CHR$(L);:L1=L:L2=L2+1
1280 L=L+1:NEXT:IFPEEK(TB)=7*K6THENRETURN
1290 IFK7THENIFL2=1THENA=CHR$(L1):G="*A*":GOSUB480:GOTO1320
1300 G="WHO":GOSUB460:IFA=CHR$(13)THENIFK7THENGOSUB490:GOTO1300E
LSEGOTO150
1310 IFA<"A"ORA>CHR$(L-1)THENGOSUB490:GOTO1300
1320 PK=TB+(ASC(A)-65)*7:IFPEEK(PK+5)=0THENGOSUB490:GOTO1300ELSE
TD=PEEK(PK+5):GOSUB180
1330 A=" REPLY":YD=1:PRINT@935,"";:IFPC(TD,2)THENPRINT"CAN'T"A:G
OTO1360ELSEIFK7THENPRINT"MUST"A:GOTO1350ELSEIFTP=2THENPRINT"TOMA
HAWKS CAN'T"A:GOTO1360
1340 G="RTN":GOSUB460:IFA<>"Y"THENYD=1:GOTO1360
1350 GOSUB360:GOSUB280:PC(TD,2)=1:YD=N(0)
1360 GOSUB350:BL=KB(1):GOSUB280:XA=N(1)
1370 R2=0:RE=VAL(MID$(C4,YD+9*(XA-1),1)):PRINT@980,"RESULT: ";:G
OSUB1700
1380 GOSUB150
1390 ONREGOSUB1410,1430,1440,1450,1460,1480
1400 BL=KB(1):PRINT@832,CHR$(31);:GOTO400
1410 GOSUB350:GOSUB170:IFKITHENRETURN
1420 GOSUB360:GOTO1500
1430 GOSUB350:GOSUB1510:GOTO1420
1440 RETURN
1450 GOSUB360:GOSUB1510:GOTO1470
1460 GOSUB360:GOSUB170:IFKITHENRETURN
1470 GOSUB350:GOTO1500
1480 GOSUB350:GOSUB170
1490 GOSUB360:GOTO170
1500 IFPEEK(PK+6)<>1THENRETURNELSEGOSUB250::GOSUB410:G="ADV":GOS
UB460:IFA<>"Y"THEN400ELSEPOKEKV(1-Y),MN:POKEV3,Z:PC(MN,0)=KB(1-Y
):X2=1-Y:BL=KB(1-Y):GOSUB40:GOSUB330:GOSUB160:GOSUB530:BL=KB(Y):
GOSUB400:IFMN<26THENBL=KB(1-Y):GOTO310ELSERETURN
1510 GOSUB400:X2=Y:GOSUB250:GOSUB200:IFJ=3THEN170ELSEIFJ=2THENX=
L:GOSUB340:GOTO1530
1520 GOSUB460:GOSUB110:IFITHEN1520
1530 GOSUB500:PC(MN,0)=NB:POKEV3,Z:POKEV2,MN:GOSUB410:GOSUB510:R
2=1:GOSUB530:R2=0:GOTO400
1580 REM Not Used.
1590 REM Not Used.
1700 IFRE<3THENPRINTE(1);ELSEIF(RE=4)OR(RE=5)THENPRINTE(0);
1710 IFRE=3THENPRINT"*MISS*";ELSEIFRE=6THENPRINT"BOTH";E(2);
1720 IF(RE=1)OR(RE=5)THENPRINTE(2);
1730 IF(RE=2)OR(RE=4)THENPRINT" RETREATS";
1740 GOTO340
```

THE Happy Hunting Grounds or Boot Hill get ready to receive casualties when the computer goes into its combat routine. In the final article in this Warpath series, we look at how the computer analyses a battle.

Last month I left you halfway through the combat sequence and slightly up in the air.

Prior to that, you had always been able to type in the code and at least be able to check it by running the program. Last month this was not possible.

The search routine is called in line 1230 and it may be wise to omit the statement K9=USR(0), while you test the rest of the program.

When writing the routine I had to set up very elaborate routines to debug it.

Normally, these consist of first, getting the code under control — that is, looking for the silly errors that clobber the whole of memory — and secondly, ensuring that the logic is correct.

It helped a great deal to write the code in Basic first and then translate it.

Note that the attacker is given subscript 1 and the defender subscript 0. First, Y is set to 1 and all attacker information is saved. A similar set is then prepared for the defender i.e.:

Attacker	Defender	
KB(1)	KB(0)	IBOARD location
KS(1)	KS(0)	Video location
KT(1)	KT(0)	Character type
G(1)	G(0)	Character
KV(1)	KV(0)	Memory location
KQ(1)	KQ(1)	"Man in Flag hex" flag.

The figure below describes the lines within the Combat sequences. Follow this through with the coding. Lines 1320 to 1500, however, require more explanation.

Once an attack has been determined, a table is set up (see lines 180 and 50).

Having decided whether the defender will (or can) return fire, the combat points are calculated (See line 280), N(Y) accumulates the points. RANGE (in Basic) is used to test whether a trooper is next to the General for an extra point.

Note also how Y is used to calculate who gets the benefit of cover.

WARPATH

Ron Potkin takes to the Warpath for the last time and deals with the rules of combat (left) and the final piece of programming. If you have had any problems with the series please write in.

Figure 1

740 : Clear attack flags. Obtain location of each piece in turn. Gosub COMBAT.
1230/40 COMBAT : Display WINDOW. Put Index in SK, SP into SS and BL in SB and call XS(16) — RANGE. if there are no attackers, return for next piece. Calculate K7 — number of defenders at 1 hex range. If zero and man is a tomahawk, attack is not possible — return.
1250/80 LETTER : Print letters against defenders, but make sure tomahawks only fight at one hex.
1290 AUTO : If there is only one attack at 1 hex (variable L2) combat is automatic so prompting is not necessary. Goto TEST.
1300/1310 WHO : Flicker for decision and check input.
1320 TEST : Test input some more and set up table.
1330 REPLY : If defender has already fired or he is a tomahawk being attacked at greater than 1 hex range, he cannot reply. If distance is 1 hex, others must reply.
1340/50 RTN : Prompt for return of fire. If he returns, determine his defence points and set attack flag in PTABLE so that he cannot reply again.
1360 : Calculate attacker's points.
1370 ODDS : Calculate result using C4 — the ODDS table.
1380 : Remove letters from screen.
1390 : Whatever will be will be.
1400 : Update BIGSCREEN and return to line 740.
1410 A-ELM
1430 A-RET
1440 MISS
1450 D-RET
1460 D-ELM
1480 BOTH eliminated.
1500 ADVANCE: If 1 hex range, winner may advance.

Finally, line 300 prints the points on the screen and adds to N(Y) a random number from 1 to 6.

We can now calculate the result using the ODDS table, C4, and print it on the screen using the routine at 1700.

The elimination in lines 1410, 1460 and 1480 are handled by subroutine 170. Retreats are carried out by line 1510. These are again controlled by Y=0 or Y=1.

This is the seventh and last in the Warpath series. When you have entered this month's code, you will have a working game up and running, ready for you to take over either the cavalry or the indians and lead them to victory against your computer.

You will also have a complete set of rules and hopefully a full knowledge and understanding of the workings of this program.

Warpath has been in such detail so you can convert it to your own machine and you can take elements of the listing and use them in your own wargames.

It has been fun writing this series and I hope you have enjoyed following it.

CALLING ALL THOSE GOSUBS!

Planning a series of GOSUBs which call one-another up is usually one of the first lessons and early thrills of Basic programming.

But how does a machine code program find its way through the GOSUBs and RETURNs which still make up a large chunk of every program?

Last month I looked at the idea of using the subroutines built into the computer's ROM. This article will tackle assembly language instructions associated with subroutines and the mechanism used by the microprocessor to keep track of subroutine calls and returns.

The instructions for subroutine calls and returns in machine code work similarly to Basic but the call is to a memory address instead of to a line number.

Executing a subroutine call makes the microprocessor continue execution with the instruction at the address specified in the call instruction, and a return instruction makes the microprocessor go back to the instruction following the subroutine call.

The 6502 has only one subroutine call instruction, JSR, which can be used only with absolute addressing, and a corresponding return instruction, RTS.

The 6809 has three subroutine call instructions; BSR and LBSR, which are used with relative addressing and take one-byte and two-byte offsets respectively; and JSR, which can be used with extended, direct page, and all indexed addressing modes. The return instruction is RTS, but there is also another way to perform a return, which we will look at later.

The Z80 subroutine call instructions all use absolute addressing. The instructions available are:

CALL address (call unconditionally)
CALL NZ, address (call if Non-Zero, i.e., if Z flag set)
CALL Z, address (call if Zero, i.e., if Z flag set)
CALL NC, address (call if No Carry, i.e., if C flag clear)
CALL C, address (call if Carry, i.e., if C flag set)
CALL PO, address (call if Parity Odd, i.e., if P/O flag clear)
CALL PE, address (call if Parity Even, i.e., if P/O flag set)
CALL P, address (call if Positive, i.e., if S flag clear)
CALL M, address (call if Minus, i.e., if S flag set)

When you use the conditional CALL instructions the subroutine will be executed only if the relevant condition is satisfied, otherwise the processor will skip to the next instruction after the CALL instruction.

The Z80 also has a similar set of return instructions:

RET	
RET NZ	RET PO
RET Z	RET PE
RET NC	RET P
RET C	RET M

STACKING IN STRUCTURE

In order to be able to get back to the right instruction after executing a subroutine the microprocessor has to save the return address somewhere. The 6502, 6809 and Z80 all use the same principle for saving the address, but the details differ.

The method for saving return addresses uses a data structure called a *stack*, in which new items are always put onto the end of the stack and stored in the order they were put, or *pushed*, onto the stack, and items taken, or *pulled*, from the stack come in the reverse order to which they were pushed. This allows subroutine calls inside subroutines to work properly, with a return always going back to the instruction following the last subroutine call executed.

The terminology for a stack can be confusing; the last item pushed onto a stack is called the *top of stack*, but the three microprocessors add to the stack downwards in memory, so the "top of stack" is actually at the lowest address.

When a subroutine call is executed the microprocessor stores the return address in the two bytes at the address referenced by the Stack Pointer register (SP in the 6502 and Z80 and S in the 6809), and decreases the Stack Pointer by two. A return instruction does the opposite, increasing the stack pointer by two and putting the two-byte return address into the Program Counter.

The three microprocessors also have some instructions that may be regarded as special types of subroutine calls.

The 6502 instruction BRK (Break) saves the return address and the status register on the stack, and jumps to the address stored in addresses $FFFE and $FFFF.

The 6809 has three "Software Interrupt" instructions, SWI, SWI2 and SWI3, that save the return address and all the processor registers except Stack Pointer S on the S stack and then jump to an address stored in high memory. SWI jumps to the address stored in $FFFA and $FFFB, SWI2 jumps to the address stored in $FFF4 and $FFF5, and SWI3 jumps to the address stored in $FFF2 and $FFF3.

The Z80 has the "Restart" instructions RST 0, RST 8, RST 10H, RST 18H, RST 20H, RST 28H, RST 30H, RST 38H, which are equivalent to CALL 0, CALL 8, etc., but use only one byte instead of the three bytes for a CALL instruction.

On ROM based computers the addresses used by these instructions will be in the ROM and will have been set up by the manufacturers. To use the instructions you will have to find out how they have been set up, either from the manual or from books and magazine articles on specific computers.

As well as the stack being used automatically to keep track of subroutines there are instructions that allow you to push the processor registers onto the stack and pull from the stack into the processor registers.

The 6502 has PHA, which pushes the accumulator onto the stack, PLA which pulls the top of stack into the accumulator, PHP which pushes the status register P onto the stack, and PLP which pulls the top of stack into the status register.

The 6809 has two Stack Pointer registers, the hardware Stack Pointer S which is used for subroutines and interrupts, and the User Stack Pointer U. The push and pull instructions are PULS, PULU, PSHS, and PSHU, and the mnemonic must

BY TED BALL

be followed by a list of the registers to be pushed or pulled. Any combination of registers except the stack pointer for the stack being used may be pushed or pulled in one instruction. For example, we can have

```
PSHS A
PULS CC,PC
PSHU PC,Y,X,DP
PULU A,B,Y
```

The order the registers are pushed onto the stack is PC, U or S, Y, X, DP, B, A, CC, and they are pulled in the reverse order. Although the assembly language allows you to list the registers in a push or pull instruction in any order the actual push or pull order is always the same.

Note that including PC in the operand of a PULS instruction to pull a subroutine return address into the program counter does exactly the same as a RTS instruction, and this programming trick is often used to save putting in the RTS instruction.

The Z80 push and pull instructions all work with two bytes at a time. The instructions are PUSH BC, PUSH DE, PUSH HL, PUSH AF, PUSH IX, PUSH IY, POP BC, POP DE, POP HL, POP AF, POP IX, POP IY.

When you are using subroutines and push and pull instructions you have to be careful to balance the number of bytes pushed and pulled between the execution of a subroutine call and the execution of the return. For example, if you begin a subroutine by pushing two bytes onto the stack and pull four bytes off the stack before the return, the extra two bytes will be the return address and when the return instruction is executed the processor will jump to whatever address happened to be in the two top bytes of the stack before the last subroutine call. We can now go back to last month's "print a message" routines.

These routines were not written to be used as subroutines, so if you wanted to print several messages in a program you would have to repeat the whole code every time. As well as changing the routines so they can be used as subroutines there are other improvements.

The 6502 and Z80 routines last month were rather complicated as the 6502 does not have any 16-bit registers and the Z80 does not have any 16-bit compare instructions.

The routines can be made much simpler by marking the end of each message with an "O" instead of providing the length of the message. With these changes the "print a message" routines, where the message may be of any length, become:

6502

Calling sequence:

```
  MESSHI = MESSGE/256
  MESSLO    =    MESSGE-256-
*MESSHI
  LDA MESSLO
  STA MESSAD
  LDA MESSHI
  STA MESSAD+1
  JSR PRMESS
  ....
```

"Print message" subroutine:

```
PRMESS  LDY O
NEXTCH  BEQ DONE
        JSR OUTCH
        INC MESSAD
        BNE NEXTCH
        INC MESSAD+1
        JMP NEXCH
DONE    RTS
```

Z80

Calling sequence:

```
  LD HL,MESSGE
  CALL PRMESS
  ....
```

"Print message" subroutine

```
PRMESS  LD A, (HL)
        RET Z
        CALL OUTCH

        INC HL
        JR PRMESS
```

6809

Calling sequence

```
  LDX MSSGE
  JSR PRMESS
```

"Print message" subroutine

```
PRMESS  LDA ,X+
        BNE DONE
        JSR OUTCH
        BRA PRMESS
DONE    RTS
```

There is another point that was skimmed over last month. We assumed that the routine OUTCH, which prints the character whose code is in the accumulator will not change the contents of registers.

This is true in many computers, but not in all. However, we can ensure that none of the registers are changed by saving the registers on the stack before calling the ROM routine and restoring them afterwards. If we call the ROM routine that prints the accumulator PRINTA we can write OUTCH routines that preserve the registers as follows:

6502

```
OUTCH PHP
        STA TEMP      PLA
        TXA           TAY
        PHA           PLA
        TYA           TAX
        PHA           LDA TEMP
        LDA TEMP      PLP
        JSR PRINTA    RTS
```

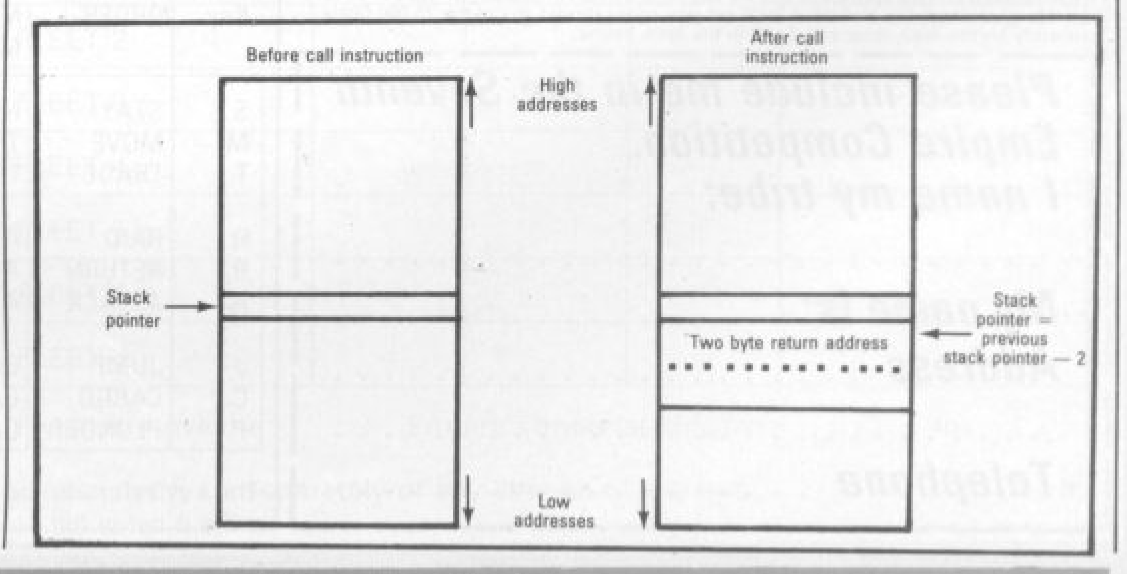
Z80

```
OUTCH PUSH AF         POP IY
      PUSH BC         POP IX
      PUSH DE         POP HL
      PUSH HL         POP DE
      PUSH IX         POP BC
      PUSH IY         POP AF
      CALL PRINTA     RET
```

6809

```
OUTCH PSHU Y,X,DP,D,A,CC
      JSR PRINTA
      PULU CC,A,D,DP,X,Y
      RTS
```

Note that we do not need to save S as the ROM routine must leave S unchanged after a subroutine call and return, and that we can put D in the push/pull list instead of A and B.



THE SEVEN

CHECKLIST TABLE

	Compare new star to the star you left	Moving orders
MOVE:	Does it belong to a **friendly** empire? Is it 1 square away, either vertically, horizontally **or** diagonally?	
TRADE:	Does it belong to a **friendly** empire? Is it 1 square away, either vertically, horizontally **or** diagonally? Is it a **different** star **type**?	
RAID:	Is it 1 square away, vertically or horizontally but **not** diagonally?	Is it the **first** movement phase?
	Does it belong to an **alien** empire?	Is it **followed** by a Return order?
RETURN:	Is the fleet Returning to a star belonging to the **same** empire as it left on the first movement phase?	Is it the **second** movement phase?
	Is it 1 square away, vertically or horizontally but **not** diagonally?	Does it follow a Raid order?
ATTACK:	Does it belong to an **enemy** empire?	If it's first movement phase, is it followed by a Stay order?
	Is it 1 square away, vertically or horizontally but **not** diagonally?	If it's second movement phase, did fleet move in its own empire on first movement phase?
STAY:	Is fleet staying at present star?	Was your first order anything but a Raid order?
CARGO, JUMP AND PLUNDER:	Does fleet start game turn at a Gateway Star?	Has it only one order over both movement phases?
	Does it move to a Gateway Star?	Is the other movement phase crossed out?
	Is it a different Gateway Star?	

Friendly = Empire which a fleet's current empire is **not** at war with.
Enemy = Empire which a fleet's current empire **is** at war with.
Same = **Same** empire as the one you've left.
Alien = A star belonging to an empire **other** than the one you left.

The Checklist Chart is one way of ensuring that you have not entered an illegal order which may result in one of your fleets becoming lost in space.

Whatever movement orders you have given each of your seven fleets, they should be checked against this chart. And if you can answer "Yes" to each of the questions set out there, then the move is a valid one.

If you come up with a "No" then the order is illegal in that context. In order to prompt "Yes" answers, some of the questions are phrased in an unusual way. The only one which may cause confusion is: "Was your first order anything other than a Raid order?" This is asked because no Raid order can be followed by a Stay order.

ANOTHER CHANCE TO ENTER

If the Seventh Empire appeals to you we still have a batch of rulebooks ready to send out. No guarantees I'm afraid but we'll put you ready should any of the 25,000 fleets currently on the map, drop out. Send in the form below.

Please include me in the Seventh Empire Competition.
I name my tribe:

. . . .

My name is: . . . .
Address . . . .

. . . .

Telephone . . . .

If you are new to the concept of Seventh Empire and want to find out how to make use of these two alien pages . . . read on.

The Seventh Empire is a unique one-way play-by-mail game. Readers send in their orders on the form opposite and then learn how they got on in the next issue of *C&VG*. There is no luck in the Seventh Empire and the skill lies in guessing how other players will have to move and taking advantage of the most profitable battles, trade routes or gateway jumps.

If you want to enter fill in the form below. But should you want to use these pages on a more simple level we will be setting an additional competition for non-Seventh Empire players in our August issue.

TAKE TO YOUR FLEETS

Welcome back to galactic conflict as the mighty space empires of our play-by-mail game clash again.

The fleets have been spread through the galaxy by our restored disc drives and the action is set to commence. You should all have received a note of your starting positions and personal code number. If not ring us quickly.

To prevent losing new fleets in space, you should take an immediate copy of your code number for future reference.

And when you have filled in the form opposite then be sure and keep a copy of it so you can work out your space profits next month — and also realise where your next move will be starting from.

All orders must be back in the *C&VG* offices by **June 23rd** so be prompt in turning around your first batch of orders.

In case your rulebook is not to hand, we have included a checklist chart and a run down of all the possible moves.

And the prize for the top scorer this turn is once again three software cassettes for his micro. By the December issue we should have an overall top scorer for the first six months and he will win himself the promised Colecovision games centre.

Remember to check your orders against the checklist chart to avoid errors which might lose your fleet in space. Any problems and your phonelines are open on Friday afternoons, phone 278 6558.

Imperial fleets are going to belong to the seven players who had control of them last time, even though their fleets may not be restricted to that particular empire.

D'Taans' Empire: K Gadman, Port Isaac
Sun Empire: R Archer, Taunton
Pirate Empire: P Nevins, Warrington
Bloodline Empire: S. Birch, Whitby
Dead Empire: D Speight, Carlton
Amethyst Empire: B.M. Jones, Diss
Water Empire: S Chambers, Norwich

May the scourge of galactic piracy never share your trade routes. . .

SEVENTH EMPIRE MOVEMENT ORDERS

Key	ORDER	MOVEMENT MODE	CONDITIONS
S	STAY	NONE	None
M	MOVE	TRAVEL	Between empires at peace
T	TRADE	TRAVEL	Between stars of different types and empires at peace
R	RAID	ATTACK	Star of alien empire (phase 1)
R	RETURN	ATTACK	To star of original empire (phase 2)
A	ATTACK	ATTACK	Star of empire at war with original empire
J	JUMP	GATEWAY	To another gateway star
C	CARGO	GATEWAY	To another gateway star
P	PLUNDER	GATEWAY	To another gateway star

The key refers to the computer code for the order but you should write it out in full.

TH EMPIRE

STATE OF THE GALAXY

A new galactic map has been formatted by the Computer & Video Games computer ready to act on your orders. The map includes fleet positions but no trade index until you have started your new trading missions.

But before you launch your seven revitalised space fleets back into the fray, digest the new information given below.

The Raid Penalty for this turn is 1 and that should be put into your Raid equations.

The Diplomatic Diagram, given below is as we last saw it in the April issue. Those empires joined by lines are at war with one another and where two empires are not joined, fleets can trade and travel peacefully between them. For example: D'Taan's empire is at war with only the Water Empire and the Pirate Empire this turn.

We have also included a reminding diagram of the Star Types and their trade values.

The form for the first turn of the second Seventh Empire series is included bottom right and please remember that we can only accept entries sent in on that form — not photocopies.

FOZUZ ○ 280 0	LARUB ♦ 242 0	YIBET ♦ 281 0	XOLIP ♥ 264 0	ITIL ♥ 234 0	FUNUS ♥ 241 0	LULIP ♦ 254 0	YANOK ♥ 252 0	XOKEG ♦ 214 0	ISOX ○ 232 0
VIZAX ○ 239 0	QIRUS ♥ 220 0	HAZAN ♦ 246 0	ABOB ○ 240 0	SONER * 255 0	VEPOZ ♥ 240 0	QATOT ○ 260 0	HEZOD * 274 0	ASOL * 292 0	SUXEK ♥ 244 0
BAROV * 265 0	WIDAN * 234 0	RURUS ○ 250 0	MUPIP * 261 0	NAXIG ○ 222 0	BETID ♦ 223 0	WAVAB ○ 256 0	RIVEV * 229 0	MEGUD ○ 239 0	NABOK ○ 234 0
DALIX ♥ 251 0	OLEX ♥ 257 0	TASAT ♥ 245 0	CAZUV * 228 0	GOVAX ♥ 243 0	DITUG ♦ 277 0	OKAP ♥ 275 0	TOXAZ ♦ 221 0	CIXAN ♦ 277 0	GOTEG ♥ 239 0
ERAK * 225 0	KOVEP ♦ 246 0	USUG * 287 0	PEBOB ♥ 277 0	JADEG ♦ 253 0	ENAK ○ 264 0	KEPAR ♥ 237 0	UGON ♦ 270 0	POROV ♦ 241 0	JINIS * 236 0
FADIS * 235 0	LOKIK ♥ 248 0	YUSES * 250 0	XAPUS ○ 240 0	IXIP * 254 0	FAGIL ♥ 256 0	LIZAG * 239 0	YODAZ ♦ 240 0	XUGOD * 260 0	IBED ♥ 255 0
VASUX * 247 0	QUXIN ○ 237 0	HIPEB ♦ 282 0	ASOR ○ 247 0	SIDAL ♥ 260 0	VIZET ♦ 268 0	QAVUV * 270 0	HAKUB ○ 255 0	APEL ♦ 255 0	SABAG ♥ 262 0
BUREP ♥ 248 0	WAGAP ♥ 220 0	ROLEK ♥ 265 0	MINEP ○ 232 0	NUVEX ♥ 261 0	BAZIX ○ 238 0	WUPIV ♥ 232 0	RORUL ♥ 274 0	MEDEN ♦ 243 0	NUZET * 259 0
DUSUP * 241 0	OPOD * 243 0	TUBOX * 244 0	CIGER ○ 251 0	GAZOR * 252 0	DABAG ♥ 254 0	OTAN ♦ 254 0	TUXUX ○ 229 0	CESER ♥ 217 0	GIRIX ♦ 250 0
ELAR ○ 245 0	KERUP ♦ 295 0	ULEB ♥ 220 0	PIRAD ♥ 244 0	JAXEL ○ 284 0	EDIB ♦ 248 0	KOLOL * 241 0	UKOP ○ 238 0	PULUD * 224 0	JUVAK ♦ 234 0

The Galactic Map

	Star type	*Trade value*
♥	*Elixir*	*200*
♦	*Gem*	*150*
○	*Energy*	*100*
*	*Gateway*	*50*

Star Types

The Diplomatic Diagram

Bloodline Empire
Water Empire
D'Taan's Empire
Sun Empire
Dead Empire
Amethyst Empire
Pirate Empire

Orders in Block Caps please

Name: ....

Code No: .... Telephone No: ....

	AT	1st Movement phase ACTION	1st Movement phase STAR	2nd Movement phase ACTION	2nd Movement phase STAR
FLEET 1					
FLEET 2					
FLEET 3					
FLEET 4					
FLEET 5					
FLEET 6					
FLEET 7					

I wish to move the .... Empire's Imperial Ship from .... to ....

Please notify us separately of any change of address. II

There's a huge choice of micros around. Each with a different 'reason to buy'.

One might have fantastic graphics, but with a sound output like a pebble in a tin can.

Another may win every brownie point in the book on games. But with programming difficulties that make your brain ache (let alone your finger tips)...

For your micro, it's no good having one star in the team. You need all-round performance that wins with flying colours (all 16 of them!). And backed by a knowledgeable dealer network that will help you explore the exciting world of micros.

THAT'S COLOUR GENIE

Owning one means that when you want to do something new, you won't have to throw away months or years of experience. And you'll find that for whatever reason you first buy a micro – you'll develop new interests immediately!

It means that once started, you can progress to be an experienced programmer. From fantastic games, to professional program applications.

SOUNDS CHALLENGING?

It's meant to! Because Colour Genie is fast and powerful enough to offer you the most exciting challenges in entertainment and education, at home and at work.

PROGRAMMABLE

Fast Z-80 chip with very programmable Microsoft* BASIC Extended held in 16K ROM.

128 programmable characters with programmable screen for text and display. Plus 128 pre-set graphics on the keyboard.

4 programmable function keys in each shift plus auto-repeat on all 63 keys.

And to help cure any of your programming bugs – Colour Genie has a full, powerful editing facility!

MEMORABLE

On 16K RAM, virtually 90% is available for you to use. Rising to a staggering 95% with the 32K RAM option. That indicates design efficiency and some **very** experienced programming.

It's not RAM size that counts – it's the usable RAM that matters!

ADAPTABLE

Screen text display is a full 40 across x 24 down. In this mode you can build up to 128 complex graphic shapes. Using the highest screen resolution of 320 x 192.

With up to 16 colours on screen (8 colours and 8 hues), get the shapes to 'move' over the screen with a 3D effect. Or you can use full-screen high graphics resolution at 160 across x 96 down in 4 colours with background colour.

In both modes, you can mix upper and lower case text with graphics.

Colour Genie
Quite simply, More . . . able

Available, and affordable!
Only £194
(including VAT)

Send NOW for full details.



LEARNABLE
Colour Genie even comes with 2 manuals. A beginner's guide, and one to take you through the first steps of BASIC, the English 'shorthand' that the computer understands (shown here with optional joystick controllers).

SOFTWARE AVAILABLE

Find the Diamond of Balmarion
The Vegan Incident
Enchanted Garden (requires 32K)
Toad Mania!
Space Fighters
Racing Driver
Mysterious Adventure Series (7 programs)
Invaders from Space
The Chomper
Cosmic Attack
Zen Editor/Assembler/Debugger
Genmon
Fortress of Evil
The Exterminator
The Graphics Master
The Deep
Double Agent
Electric Etch
Skramble
Kong!!
Blitz
Windscale
Pontoon
Snake
Music
Electronic Organ
Break-Out (Joysticks)
Morse Code Trainer
Rodeo
Lifeboat & Noughts and Crosses
Round Table (Adventure)
Murder at Gosforth Hall (Like Cluedo)
Missile Strike
Galactic Attack
Mousemaze
Asteroid Mission
CSAVERS (Genie 1 to 4 Basic Trans.)
Monitor 3
File Handling
C.G. Copy
Maths Practice Program
CORPLAN (Business and Educational Software)
Character Generator (2 games on reverse side)
Word Processing

COMMANDABLE

SHAPE, SCALE, COLOUR, PAINT, CIRCLE, FILL, PLOT – the list goes on with more than 80 others.

Add more than 40 graphic, arithmetic and other functions. You can see the power behind Colour Genie.

COMPOSABLE

Outstanding facility with 3 sound generation channels. Independent or simultaneous with a full range of 8 octaves on each channel to give the synthesized sound of instruments such as drums, flute and harpsichord. A bomb, a car or a bird!

Programmable pitch, duration and volume.

White noise. Special effects. Full enveloping. Plays through your TV or Hi-Fi (with picture on TV). SOUND AND PLAY commands.

USEABLE

There's no shortage of action-packed games available now. But as your expertise develops, you'll find Colour Genie software to meet your growing skills. From some of the best writers around.

Education, music, business and many other applications.

Regular software update lists. Backed by Lowe Soft, the special Lowe Computers software service. All you need to get the most from your Colour Genie.

ENJOYABLE

Your optional Colour Genie joysticks must be the best in the business!

Slam them hard for explosive screen action. Touch them gently for slow precision. They each use a 6-bit chip and convert from normal analogue to digital response.

And each stick has a built-in numeric pad to help build exciting two player applications.

SHARE-ABLE

The National Colour Genie Users' Group welcomes you! Free magazine every month for the beginner and the pro. Where to get software. Its own software library. User experiences, and the opportunity to sell **your** software on the Group's own label.



GUARANTEE-ABLE

Our optional 2-year breakdown guarantee underlines the reliability of Colour Genie. Only £16.50 from date of purchase.

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For everybody new to computers, all the technical words are a bit of a mystery. But for Colour Genie, you'll find excellent books which take you from wiring in the plug to how to get the best from the computer!

Give us a call and we can update you on current titles.

Happy computing!

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CLIPABLE Please send me full Colour Genie details, software list and the address of my nearest specialist Dealer.

Name

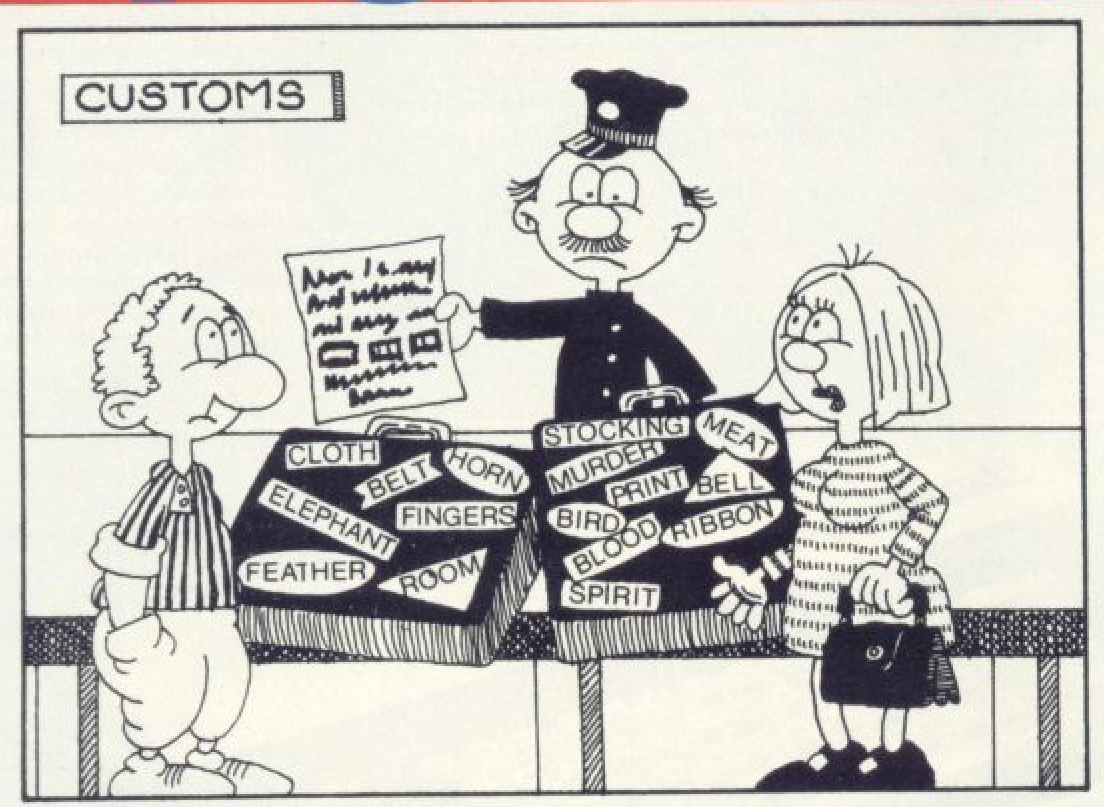
Address

Postcode

Lowe Computers, Lowe Electronics Ltd., Chesterfield Road, Bentley Bridge, Matlock, Derbyshire DE4 5LE Telephone: (0629) 4057, 4995.

WM&SR

PUZZLING



ANYTHING TO DECLARE?

These two passengers certainly have!
Among the rather weird collection of items in each suitcase there are two which definitely do not belong with the rest. Can you deduce which pairs should be removed for inspection by the Customs Officer? Perhaps, too, you can state how these four contraband items are related to each other.

QUICK WEIGH IN MATRON

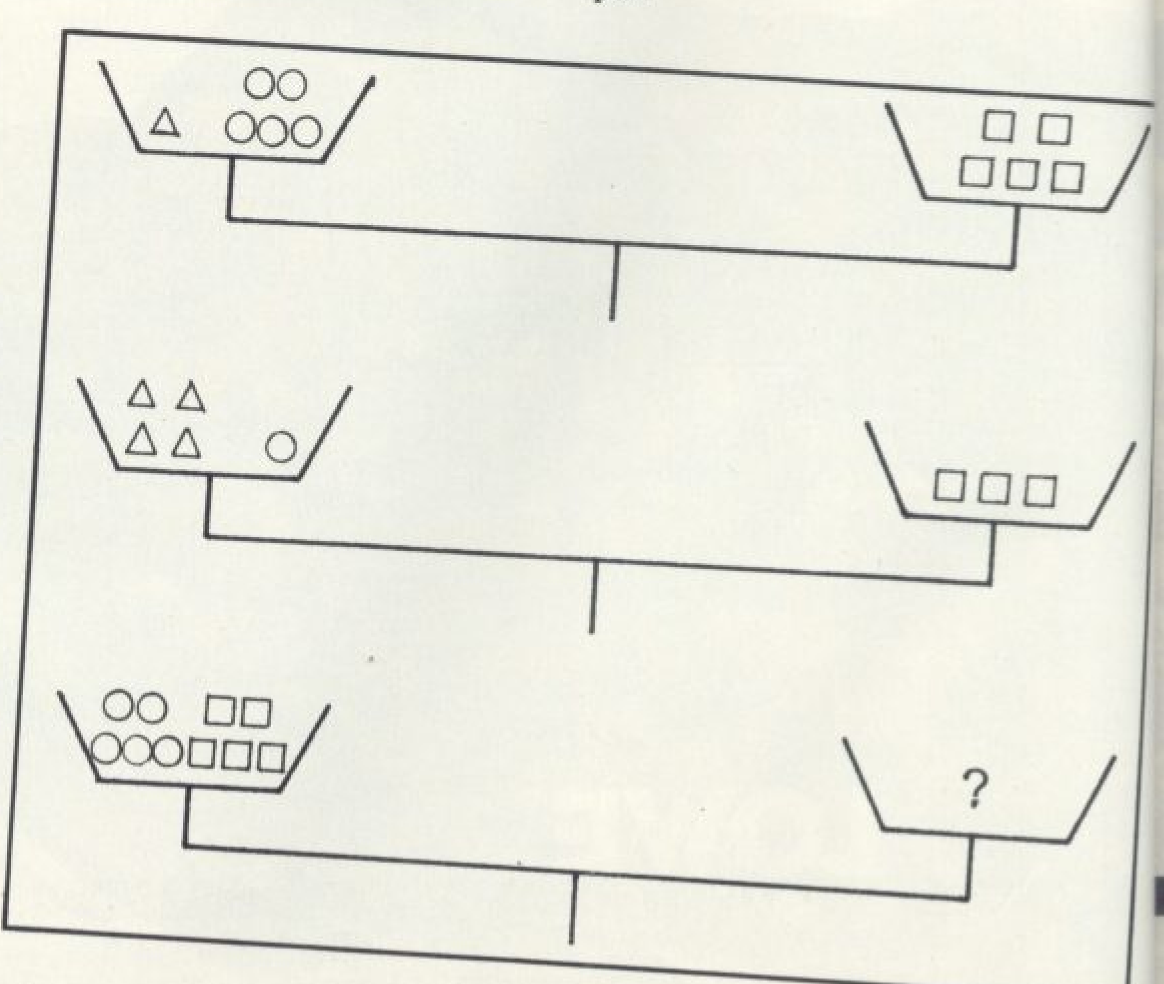
Quite early into a recent hospital visit I was surprised by a request to hop on the scales and be weighed. I had duly hopped before I had even begun my mumbled reason for being there — a desperate attempt to unload about a tonne of unwanted Re**'s D****t into the ENT waiting area.**

And that explanation was cut short by a fearsome matron who burned me to a crisp with her acid enquiry as to whether I always weighed myself with an overcoat on.

It was some hours later that I realised what I should have done — dismounted, carefully taken my coat off, folded it over one arm and stepped back onto the scales again!

As it was I discarded the tonne and fled, taking some small consolation in sending, anonymously of course, this picture. If I have read her correctly it will take her some time to work out just how many TRIANGLES are needed to make the third pair of scales balance. Which should delay the processing of my sample for a week.

Readers of this magazine, however, are only allowed thirty seconds to complete this simple operation.



THE LOWEST DICE ROLL

Summer is now recognised medically as the most dangerous season for us members of the new species, *fanaticus computicus*. It is the time when those mere mortals we live alongside feel the urge to remove a large quantity of their outer clothing and leap about shouting "thirty-fifteen", "Howzat Umpire" and "Mowed the lawn three times today!"

A strong urge comes upon us that we should also be doing something energetic and that the entire population is becoming fit around us.

But take heed . . . it can be fatal to kick the chair back and join in. A violent bout of croquet can ruin that typing finger. So here is a gentler way to move a few muscles, stimulate the brain, and so aid digestion.

Copy our diagram, making the squares large enough to accommodate whatever size die your Monopoly set is supplied with. Place the cube in the top left square so that the 1 is on top and the 2 is facing you. In all standard dice the 3 will now be on the right. *(Note: dice other than standard are not allowed!)*

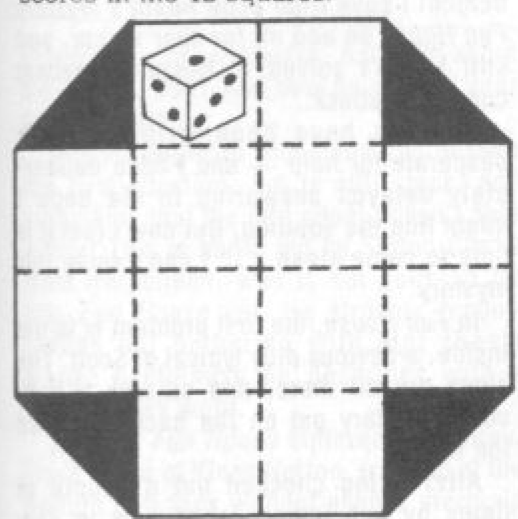
A move is to roll the die by a quarter turn into an adjacent square, across or up or down — spinning diagonally over a corner is forbidden. After the move *fill in the line you have just crossed* with a pen.

As you proceed on this rolling tour of the board you will gradually complete the sides of the squares. When you draw a line which finishes a square put a number in it — that number being the value showing on top of the die at the time.

The square just completed will either be the one the die is in or an adjacent square — occasionally you can complete two squares in one move; in which case enter the top die number into each square.

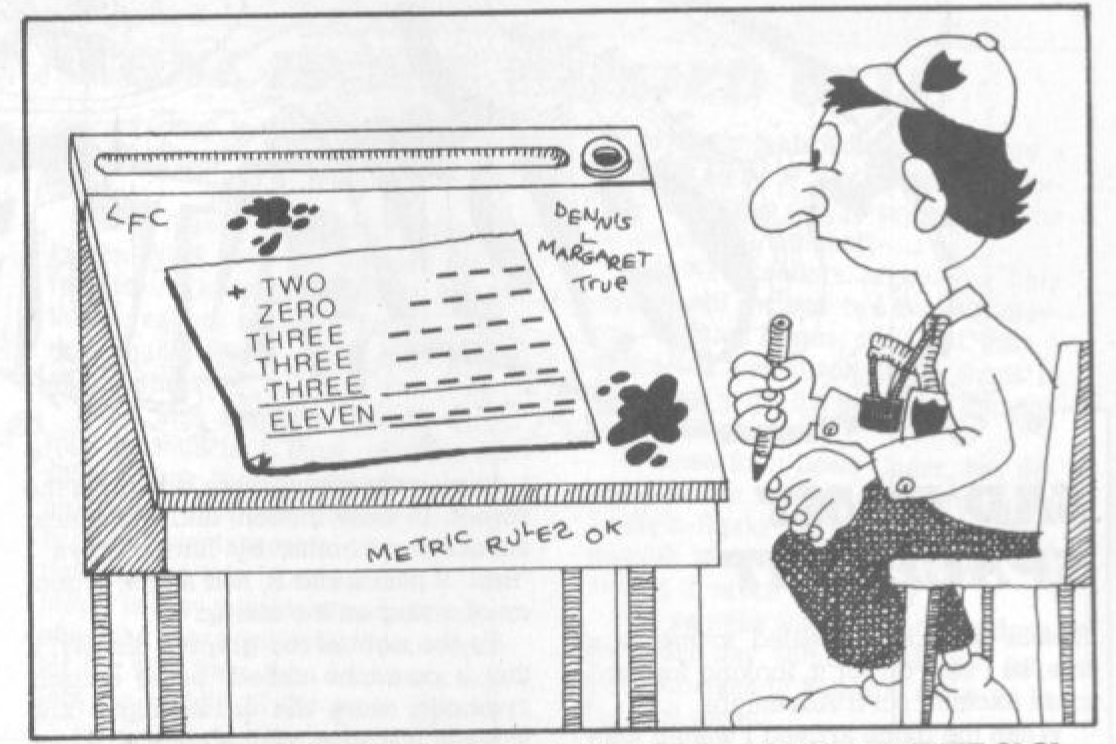
There is only one restriction on movement: if possible you must roll so that a new line is drawn — you may only roll over a previously drawn line if there is no other choice.

The exercise ends when you have completed every square and your effort can be measured by the sum of the scores in the 12 squares.



The challenge is to find the path which scores the *lowest total!* You may record your moves by noting the initial letter of the direction you move the die each time: Up, Down, Right, Left.

Entries should be written in the form of a list of moves and include a copy of the diagram with scores entered, and the total claimed. Usual rules apply and the editor's decision is final!



A MANGLED MATHS MESS

When Paul Tutherwon gained his hatrick of detentions in one week (awarded for his believed frivolous calling out of *"mangle"* when asked to name one kind of angle) it was decided to make the punishment as ingenious as his classroom answers.

He was given this word sum which is so obviously correct that little development seems possible.

But, since there are ten letters being used and our counting system has ten digits, 0 to 9, he was asked to replace each letter by a digit and convert the diagram into a calid addition sum.

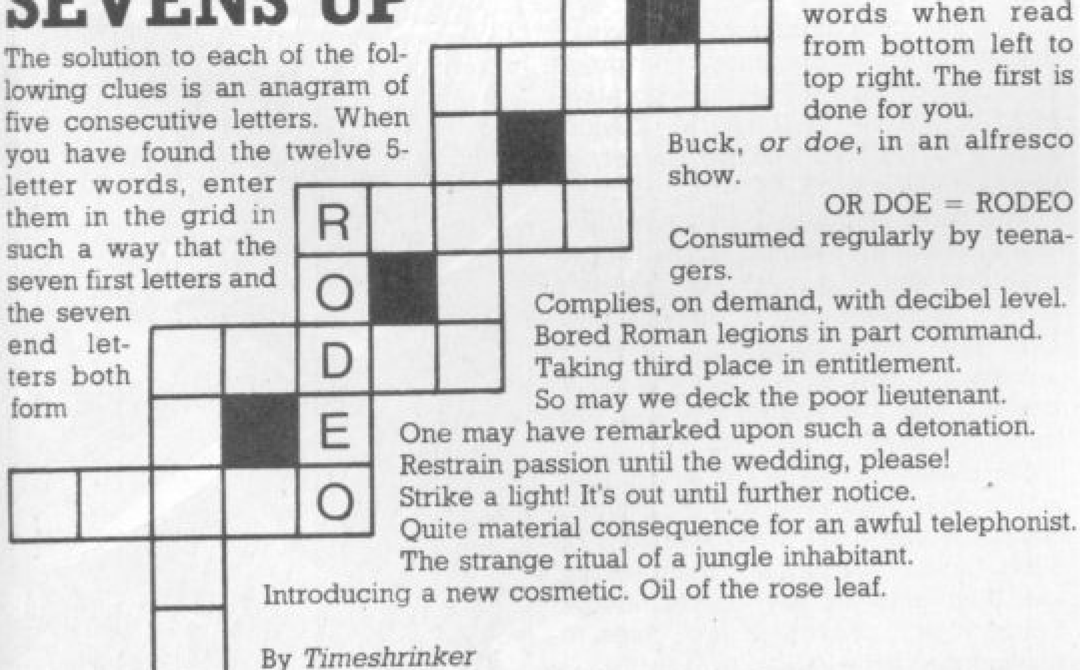
As always, the same letter stands for the same digit each time it appears and there are no leading zeros allowed.

Supper is in half an hour and fish fingers feature on the menu. Can you give the erring but likable lad a hand and tell him which letter represents which digit?

By Roger Myers

SEVENS UP

The solution to each of the following clues is an anagram of five consecutive letters. When you have found the twelve 5-letter words, enter them in the grid in such a way that the seven first letters and the seven end letters both form words when read from bottom left to top right. The first is done for you.



Buck, *or doe*, in an alfresco show.

OR DOE = RODEO

Consumed regularly by teenagers.

Complies, on demand, with decibel level.

Bored Roman legions in part command.

Taking third place in entitlement.

So may we deck the poor lieutenant.

One may have remarked upon such a detonation.

Restrain passion until the wedding, please!

Strike a light! It's out until further notice.

Quite material consequence for an awful telephonist.

The strange ritual of a jungle inhabitant.

Introducing a new cosmetic. Oil of the rose leaf.

By *Timeshrinker*

SOLUTIONS

UNAC-CUSTOMED

The lady should discard Feather and Elephant — all the rest of her things take GREEN as a prefix (green fingers, green horn . . .). The gent should throw our Meat and Spirit as all his words can be preceded by BLUE.

These four words are linked by taking WHITE (white feather, white elephant, white meat, white spirit).

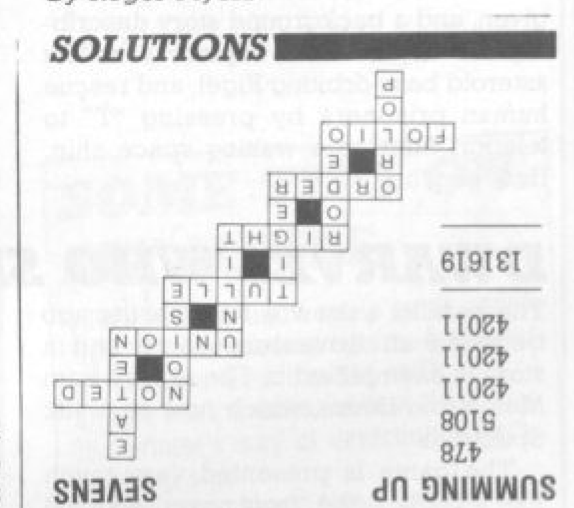
MATRON'S SAMPLE

18 triangles: 10 squares = 19 triangles (so 5 = 9½)
10 circles = 17 triangles (so 5 = 8½)

SUMMING UP

478
5108
42011
42011
42011
131619

SEVENS



PUZZLING

BY TREVOR TRURAN



SAD IN MY SPACE SUIT

Rescue at Rigel appealed to me as a title, so I sent off for it, looking forward to an exciting sci-fi Adventure.

When the game arrived I waited with eager anticipation for the cassette to load, entranced by the illustration of a scantily clad lady manacled to an alien machine, being menaced by an overgrown ant. Just behind the ant, blaster in hand, was Sudden Smith, our hero, clad in a space suit. That would be me, I thought.

In the box with the cassette was a 32 page booklet. A quick perusal soon revealed that here was something very similar to Hellfire Warrior, (see *C&VG*, April '82), a Dunjonquest game.

A list of single letter commands was given, and a background story describing the objective — explore a hollow asteroid base orbiting Rigel, and rescue human prisoners by pressing "T" to teleport them to a waiting space ship. How exciting!

In play the rooms were drawn on the screen in slow motion, and movement across the rooms, by hitting keys 1 "thru" 9 plus L and R, had all the urgency of a slug on the attack.

To the right of the graphic display, if that it could be called, being entirely symbolic, were the usual fatigue and wounds statistics, with a couple of new ones indicating power in the power pack, and blaster bolts left.

The aliens, although looking like crosses, were actually a race called Tollahs — the superior ones being High Tollahs. Probably an American attempt at satire. If so, it left me cold, as did the rest of the game.

If you like Dunjonquest games, fine, but don't, like me, expect anything different in this game. I got the distinct impression that the intricate background story in the book was written around an existing formula to give it a new lease of life.

Rescue at Rigel, costing over £20, runs on cassette on a 32 K Atari or 16 K TRS-80, and on disk on 48K Apple, 32K Atari, or 32 K TRS-80. From Computer Magic.

MUCH MISERY IN SCOTT'S FUN HOUSE

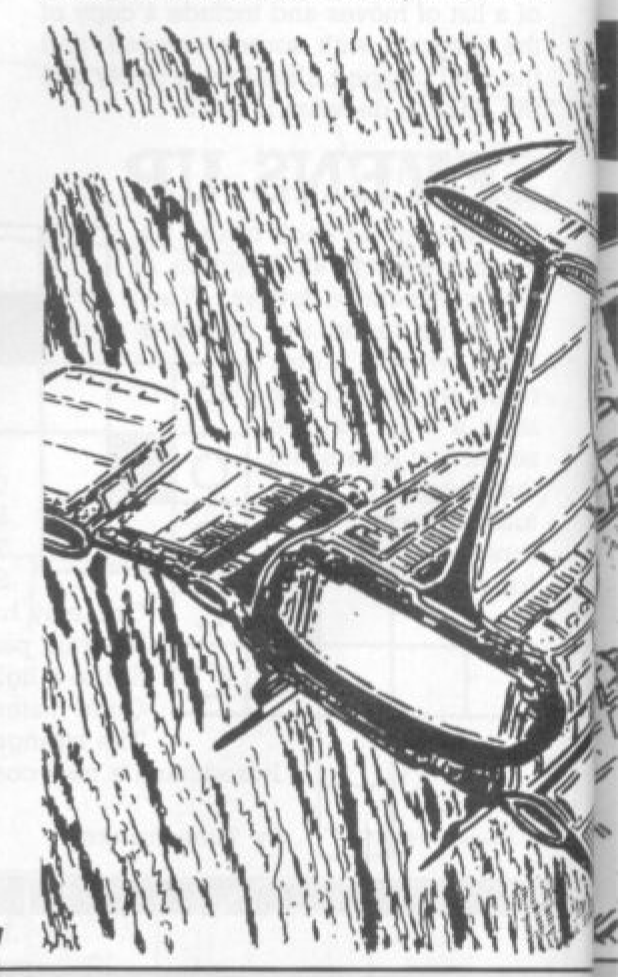
OK — I might as well admit it — I'm beaten! I have tried Scott Adam's *Mystery Fun House* on and off for over a year, and still haven't solved it, despite a recent concerted attack.

Readers have been writing to me desperate for help — and I have deliberately delayed answering in the hope I might find the solution. But now I feel it is time to come clean . . . I can't solve this mystery.

In *Fun House*, the first problem is to get inside, a devious ploy typical of Scott. The clues are all there, and so with a self-congratulatory pat on the back I entered the house.

After being chucked out a couple of times by a bouncer, found how to stay inside. Round I went pressing buttons and pulling levers — all in search of the missing plans!

I shot clay pigeons, met up with a mermaid, got deafened by a calliope, and unlocked the secret of a trampoline and a



DWARVES WHO SPEAK ENGLISH

The parallel I drew a few months ago between an Adventure game and a story is exemplified in *The Hobbit* from Melbourne House, which runs on a 48k Spectrum.

The game is presented very much like a book — the "front cover" with full colour illustrated title is displayed whilst the program loads.

The game is a fairly close representation of the book, which is itself supplied as part of the package. The action of the game takes place in over 50 of the locations described in the book and depicted on the map of Middle Earth.

On the first visit to a location, a full colour picture of the surroundings unfolds, adding to the impression of a story-book game.

But the player should beware of gazing at the attractive pictures for too long — another feature of the game is "Animaction", whereby the various creatures go about their business inside the computer.

Messages appear spontaneously on the screen from time to time as a result of this background activity, which has an effect on the course of the game. While you dither, don't be surprised to see Gandalf or Thorin, up and leaving either.

The possible commands are very flexible. A language recognition program called "Inglish" is incorporated, and "ATTACK THE TROLL CAREFULLY WITH THE SWORD" is recognised as easily as "RUN".

The game is linked to the story by a 16-page booklet which explains the grammar and vocabulary of "Inglish", the split-screen mode of display, plus hints and tips on playing the game. If you are a Hobbit fan then you will enjoy playing the book and reading the game . . . I think?

The cassette costs £14.95 as it is sold with a paperback version of the Tolkien classic. If you don't know the story of Bilbo, Gandalf, Gollum and the dwarves and their epic journey across Middle Earth, it will provide a few clues to playing the game.

BY KEITH CAMPBELL

YOU'RE NOT ALONE IN THE PADDED CELL

It is comforting when stuck in an Adventure to know you're not alone! Many readers write in desperation for help.

The interesting point is that their problems are fairly similar and tend to revolve around a small number of Adventures.

Perhaps these are the games intriguing enough to worry about! On this page help with these sticking points is often at hand!

I would like to help my mystery correspondent, recognisable by his distinctive notepaper, who writes variously as Bilbo from Bag End, and Desperate Adventurer from A Padded Cell!

Turn the page upside down Bilbo, to discover how to cross the river. And please reveal your true identity next time!

Many thanks to Geoff Phillips of London NW9, who has enabled me to re-exist in Philosopher's Quest. For all those readers dying to know — it's really quite simple — just think like a philosopher!

Geoff also mentions that he feels five seconds is a more realistic response time for an Adventure, since one cannot physically travel from room to room instantaneously. True, the first time around this is acceptable — the player is busy thinking ahead. But what about the poor devil trying from scratch for the 99th time, who knows his way into the middle of the game like his twice times table and hasn't saved a suitable version? Any views, Adventurers? How often do you save your game at the crucial moment?

Troubled readers requesting help this month include two Bedlam players. Richard Jones can't get past a guard dog and Simon Clarke wants to know how to get the green key from the electro-shock room.

G. Keen from Down Under, has designs on the demise of a gargoyle in Tandy's Raaka-Tu. Can any readers, through me, help these troubled explorers to reach their goal?

And perhaps when you are similarly stuck one day, someone else will provide the clues to help you move on to the next room.

strange pair of spectacles. But what about the second bolt? And how do you get your fortune told?

Alistair Miller of Richmond can answer the first question, but is still stuck, and complains that the hint sheet doesn't help either! This is borne out by Simon Clarke from Harpenden, who is not quite so far into *Fun House* yet. He strongly recommends not bothering with hint sheets whose usefulness he describes with a four-asterisk word.

Another *Fun House* sufferer is the Rev. Dave Byrne of Kings Norton, trapped at the bottom of a tank without even a mermaid to coiffure!

So we're all stuck at different places — and apparently all face insoluble problems. Surely if we're each capable of ocercoming some of the difficulties which others thought impossible, it is within each of our capabilities to reach the end? Just a matter of perseverance!

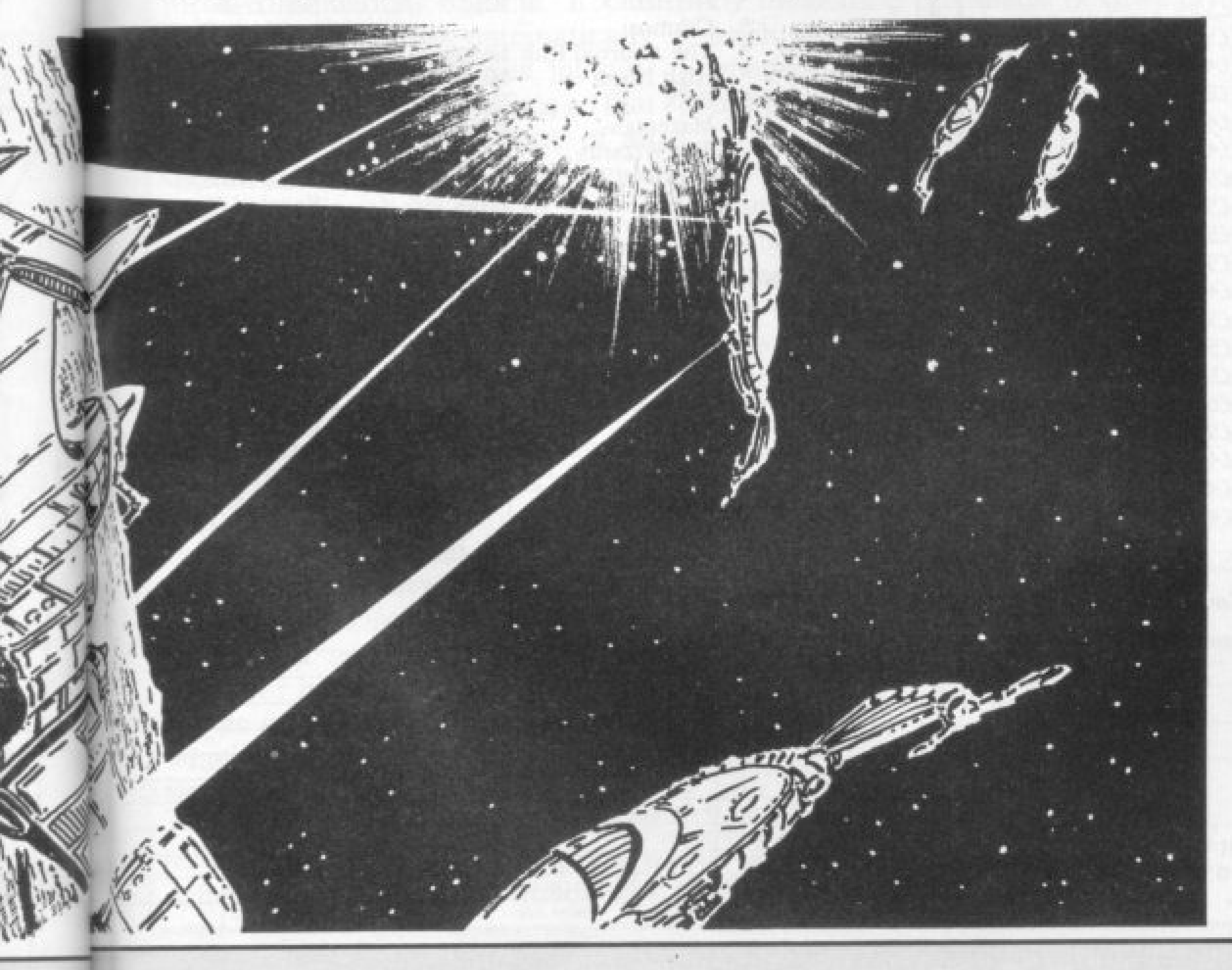
Back to the keyboard, Adventurers! And if I have any luck — I'll let you know!

Fun House runs on TRS-80, Video Genie, Atari, Vic-20, Apple and Sorceror, and is certainly one of Scott's most addictively aggravating Adventures! Buy it if you want a real challenge.

● If you are struggling with an adventure and feel that you will never find a way around the problem, then my own small talents plus the might of *C&VG*'s dedicated adventure players may provide the answer.

Write in to: Keith Campbell Adventure Helpline, Computer & Video Games, Durrant House, Herbal Hill, London EC1R 5JB. If I don't know the answer then I can alsways throw it open to the readers.

Please don't pick up a pen at the first sign of a problem. You will only get a full sense of achievement from a completed adventure if you have solved every problem yourself. So before you write in, give yourself a chance to solve the problem or find another way around it. If you can't succeed and half the adventure is never played because you cannot find a way round one particular problem then is the time to write to the Adventure Helpline.



SOME TIPS ON MY HINTS

A few months ago I wrote some coded tips, and a decode program. A number of readers had trouble with this. I should have mentioned that the £ was the printer's way of depicting a hash, or sharp sign.

Some machines didn't have all the features used and a CLEAR 1000 statement was needed for a Tandy.

To avoid such problems in future, I will show clues upside down. Don't twist the page it you don't want help with *Hobbit, Adventureland and Savage Island, Part 1*.



HELP IS AT HAND

To cross the river, throw the rope. Sometimes it will land on the boat, then pulling it will enable you to cross on using the boat.

To get past the thin bear, yell in American!! To keep another bear at bay, give him salt made from tidepool water evaporated on the ledge outside the cave.

GRAPHICS

By Garry Marshall

MAKE SENSE OF WHAT YOUR MICRO "SEES"

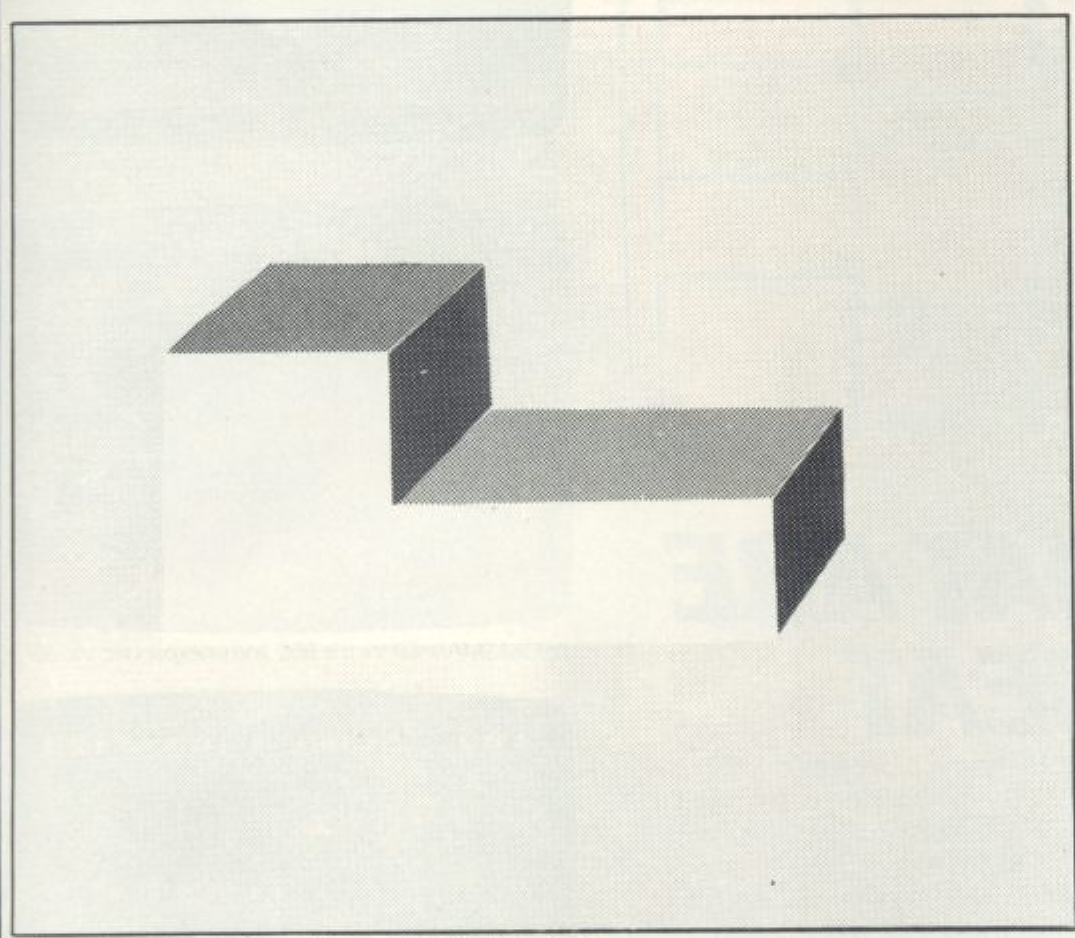


Figure 1: look no edges but a recognisable shape.

A computer can make sense of what it is seeing when it is presented with line drawings of simple three-dimensional objects. It can run a program that automatically determines which edges jut outwards and which go inwards so that the three-dimensional shape of an object can be worked out from a two-dimensional drawing of it.

Unfortunately, when the computer is seeing the real world it does not see line drawings but, rather, more or less what we see.

However, it is not too difficult to reduce an ordinary image of a scene containing three-dimensional objects to a line drawing. A method for doing this can be explained with reference to figure 1.

An examination of this figure will prove that the image shown in it has no **drawn** edges. Yet the human observer has no difficulty in detecting its edges. Edges are perceived wherever there is a sharp change in the shade of grey.

A computer can be programmed to detect the edges in a picture using the same idea. An image of a scene can be turned into a line drawing in the following way.

1. Convert the image into numbers by measuring the shade of grey in each square of a grid covering the image and compiling a corresponding array of numbers.

This can be done by measuring the intensity of the light reflected from each square. The part around the angle of the L in the L-shaped object shown in figure 1 will give the following array of numbers when it is covered by a grid with 5 rows and 5 columns.

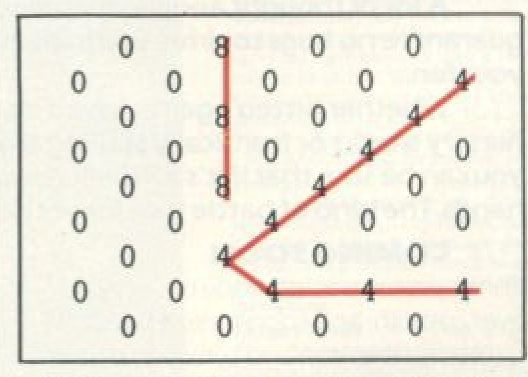
10	10	2	2	2
10	10	2	2	6
10	10	2	6	6
10	10	6	6	6
10	10	10	10	10

Light into numbers.

2. From this array of numbers find another array giving the differences between adjacent numbers both horizontally and vertically. This array will show differences in intensity, which is what we are using to detect edges. The new array is in this case

	0		8		0		0	
0		0		0		0		4
	0		8		0		4	
0		0		0		4		0
	0		8		4		0	
0		0		4		0		0
	0		4		0		0	
0		0		4		4		4
	0		0		0		0	

3. Join adjacent entries with similar values in this new array. The lines obtained in this way should give edges in the original scene. In our case the following lines are obtained



	0		8		0		0	
0		0		0		0		4
	0		8		0		4	
0		0		0		4		0
	0		8		4		0	
0		0		4		0		0
	0		4		0		0	
0		0		4		4		4
	0		0		0		0	

This gives the arrowhead junction of lines that occurs in the part of the object that we examined.

In this way a computer can be programmed to see by running a program to extract the edges from a picture of a real-life scene and then running a program to determine the meaning of the line drawing formed by the edges.

In a very general way, this is what happens in the brain and eye when we see things. It also helps to explain why we can recognise cartoons and characatures so easily.

They are composed of lines, so that edges are presented directly. Consequently the brain does not need to perform its usual first stage of extracting edges, but can start its work at a higher level than it can with an ordinary picture.

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REVIEWS

TRACK DOWN THE NASTY SIZZLING ALIEN ENEMIES

JETPAC

Building your rocket and fuelling it is the idea of the latest game from Ultimate.

The tape loaded successfully first time and while the game was loading an impressive title screen was displayed.

The game starts with a rocket ship in three parts. This has to be assembled by picking up each of the pieces in order and dropping them onto the base segment which is already in position at the bottom of the screen.

Once the rocket assembly is complete, you will need to get six fuel pods on board by picking them up as they appear randomly on the screen and dropping them into the craft.

When fuelled, you can board the ship yourself and blast off to the next planet where a similar task faces you.

If all this sounds too easy, then you probably haven't heard about the thousands of aliens who inhabit each planet and are, "in desperate need of blowing up". You are equipped with a laser weapon with which to do this and also a jet-powered transport system strapped to your back, hence the title. If you are hit by an alien then you lose one of your four lives. On the first screen the aliens are not too difficult to avoid but on subsequent planets they become more intelligent and are able to track you with ever increasing accuracy.

Jetpac is very playable, addictive and original arcade type game. The graphics are superb but the sound effects bore a striking similarity to a pan of frying eggs and bacon. By the time I reached the fourth planet I was starving!

The choice of movement keys is well thought out, although the program also accepts a joystick from Kempston.

Jetpac runs on any ZX Spectrum and is for one or two players. It costs £5 from Leicestershire-based Ultimate and comes complete with a five year unconditional guarantee which can't be bad.

- **Getting Started** 9
- **Value** 9
- **Playability** 9

BUGS HINDER THE GREAT COSMIC ESCAPE

ESCAPE FROM ORION

Escape from Orion is the first Donkey Kong style game to come under the scrutiny of our BBC reviewers.

As the first software house to attempt such a complicated arcade to home conversion Hopesoft are to be congratulated for their pluck.

That is where the congratulations have to end. The game fails on a number of counts.

Although it gives you four screens of graduated toughness they are not interactive. When you have completed screen one you do not automatically go on to screen number two, but must go back to the menu and select the next stage. Effectively it's like playing four separate games.

The next gripe is either as a result of a bug or bad design. You cannot go up the ladders that connect the various levels but



Illustration: Jon Davis

can only descend to the bottom of the screen.

This is most frustrating as when you get to the bottom of certain screens you are trapped through no lack of skill on your part.

This problem is eliminated to some extent on the third screen which has two lifts connecting the floors.

Graphics-wise Escape from Orion is adequate though not impressive. Your little man arrives in his space craft and must then run down the ladders collecting the spanners which are dotted around the four levels of play.

Every so often a green cat-like alien appears at the side of the screen and flings an object at you. These are easy to dodge and they don't track you down the ladders as do the barrels in the arcade game.

To dodge objects press the space bar to make your little man hop over the obstacles.

You also make him jump up to collect the various items which he will need to make good his escape.

I played the game with the keyboard but it would be better with a joystick.

This could quite easily have been a good game if one or two things mentioned had been sorted out. As it stands we cannot recommend it.

Escape from Orion runs on the BBC model B and is available from Hopesoft of Berkshire at £6.75.

- Getting Started 8
- Value 3
- Playability 4

HELP FILL THE INTERGALACTIC TRADE GAP . . .

TRADER

You are Trentor a space merchant and you're trade route lies between the six moons of Meridien.

All but one of the moons is inhabited and you begin the game with 1,000 credits to buy fuel and stock.

The skilled trader will develop a comprehensive knowledge of the values of the commodities in this space sector.

Petrochem is a liquified mineral with lubricating properties and also a raw material for the manufacture of Plasitron on Alpha.

Munch is an organically derived foodstuff available in sweet and savoury varieties. Price fairly stable.

Synthomunch is pretty disgusting to eat but highly nutritious and bought by the less wealthy settlers.

Boosterspice is one of the black market commodities. It's a narcotic — a less refined form of Hi-Lyfe but with unpredictable side effects.

Gold is now of little value and used as an anti-corrosive plating.

Raw fuel is the radioactive ore scattered over the surface of Gamma. Refined and liquified for hopper fuel.

All these prices are randomly generated including your fuel so you must keep a check on what you buy and the price you pay, as you have to sell at a profit.

Trader is a game of fantastic graphics, colour, with some nice tunes thrown in as well.

The game is made up of three separate 16K programs which are played one after the other.

It is supplied with a 16-page booklet, which sets the scene for the game and provides instructions.

Trader is now being marketed by Quicksilva and is available for three computers: ZX81 plus 16K, 48 Spectrum, and the Vic 20 with 16K.

The games are available from Quicksilva stockists at £9.95 for the Spectrum and ZX81 versions and £14.95 for the Vic 20.

- Getting Started 9
- Value 6
- Playability 6

SAVE BILL THE WORM FROM SUDDEN DEATH

MINED OUT

Your mission (should you decide to accept it) is to rescue Bill the worm from his enclosure on Level 7 of the minefield.

Well, I've played minefield games before, but this one for the Dragon 32 has a novel approach. It is slickly presented on screen, easily played with speed using the cursor arrows, and has surprises, bonuses and a few gimmicks thrown in.

Each level is slightly different, but the basic theme is for the player to cross from bottom to top of the screen, being warned at each position how many mines are adjacent to him. One false step and BOOM!!

The first two levels show the players previous paths, and so he can move along them with absolute safety. Things get more difficult as the game progresses.

A nice feature is that at the end of each level, the mines are shown, and the player is treated to a selectable speed action replay of his movements. Music and sound effects suitably accompany the player's actions. I liked it! Available from Quicksilva of Southampton.

- Getting Started 10
- Value 8
- Playability 10

Illustration: Jon Davis

REVIEWS

A BLADE HUNTER FINDS IT HARD TO KEEP RUNNING

BLADES OF BLACKPOOLE

Blade of Blackpoole is one of those adventure games.

You know the sort I mean. After travelling a couple of moves North, South, East, or West you come up against something that you just can't shift, get past, kill, cajole or bribe.

In the Blade these objects come in the shape of an ugly man-eating plant, a boat which cannot be rowed, sailed, or paddled, a landslide which you cannot climb, tunnel under, or walk around, and a patch of quicksand which is determined not to let you cross.

That's as far as I got. Heaven knows what lies beyond.

So why can't you sail the boat? I'm sorry I can't answer that.

All right then, so why can't I climb the landslide. I'm sorry, I can't answer that.

That's about as much advice as this reviewer can offer on penetrating Blackpoole so I may as well tell you about the plot and the graphics. Anyway, even if I knew secrets, I wouldn't tell you.

Plot is strong. You are searching for the magical sword of Myraglym. Rumour and legend talk of a secret chamber near Blackpoole in which the sword is said to lie. Discovering the blade is only half the battle. It must now be returned safely to its rightful place on the alter from whence it was stolen.

The lost blade is the source of great evil in the world as men have taken up arms against their fellow men in the quest for the blade, their rightful vocations in the world neglected, with the serpents and man-eating plants allowed to extend their evil over the kingdom.

Fine, but who am I? I'm sorry, I can't answer that.

Graphics are reasonably good. The game uses the window picture system at the top of the screen with the text flashing up beneath.

Tolkien-esque, with large expanses of land, shrub-like trees and sparse vegetation — the illustrations enable you to easily lose yourself in the mythical land of Blackpoole.

I liked this game, even if my novice's lack of adventures know-how stopped me getting very far into it. The important thing is that the game captured my imagination sufficiently to keep me coming back for more.

Blade of Blackpoole runs on Atari 800 with 48K. It is available on disc from Calisto of Birmingham, at £28.95.

- **Getting started** 8
- **Value** 6
- **Playability** 6

CONTROLS HINDER THE WOULD-BE MISSILE KILLER

CITY DEFENCE

Another variation on the Missile Command theme for the Dragon, but different enough to be interesting. The player has a central base from which he aims his defences against beams gradually creeping down the screen at angles, each aiming for one of six cities also at the bottom of the screen.

By moving his joystick, the player moves his sight, which he must accurately place on the end of a moving beam and press the button to destroy it.

Beams hitting a city will destroy it with a

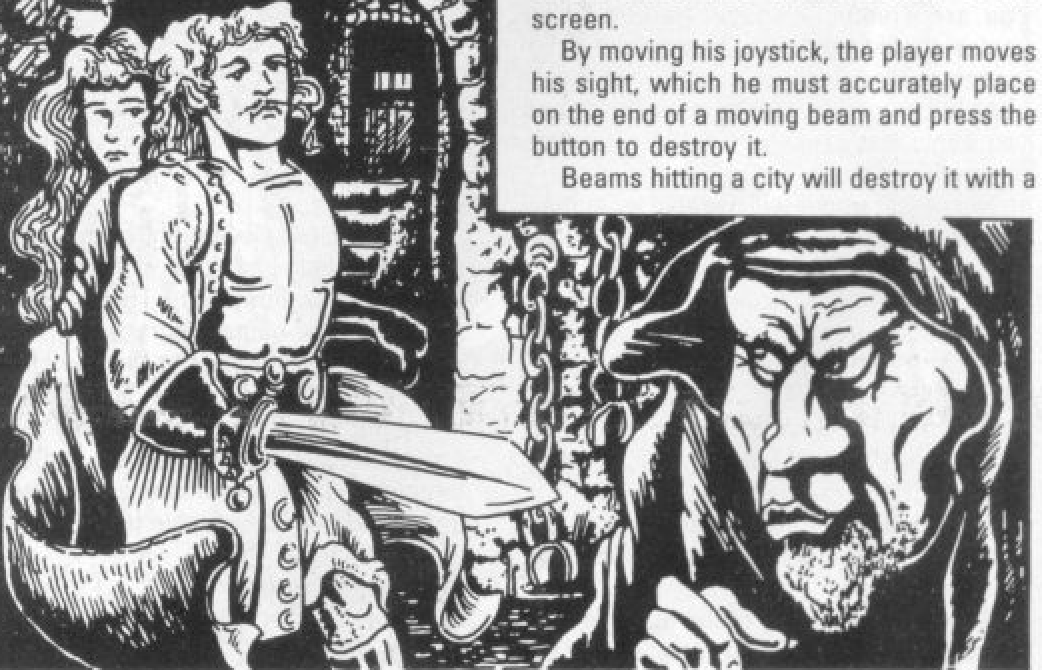


Illustration: Dorian Cross

suitable noise, beams being put out of action reward the player with triumphant music and points.

There are four levels of difficulty which varied the speed at which the beams descended. I found that only the easiest level gave the player much chance.

This was because the defence sight consisted of a flashing square which seemed to be invisible more often than seen. The joystick required only very slight movement to control the defence sights, and overshoot was far too easy when the sight was invisible. This made playing very much a matter of guesswork.

An interesting game, but the weakness in control spoiled it. The game is available from Shard Software of Brentwood, Essex at £5.95.

- **Getting started** 10
- **Value** 5
- **Playability** 6

ONE FOR THE YOUNGER MICRO GAMESTERS . . .

FUN AND GAMES

A compendium of ten simple games for the Dragon 32 including noughts and crosses, and, would you believe — computer controlled musical chairs!

My first reaction to this tape was that the games were rubbish — Noughts and Crosses was a piece of cake to beat, Anagram too complicated to control with a time limit, and Snap was basically a sequence of numbers which required the space bar to be pressed if two of the same number appeared consecutively. The matches were so few that I nearly fell asleep.

However, the rest of the tape had Pin the Tail on the Donkey, which required a blindfolded player to operate the joystick, guided by the pitch of a sound. Musical Chairs controlled the cassette player, into which a music tape had to be inserted.

Eventually, I came to the conclusion that here was an excellent collection of party games for younger children aged 5 to 9.

As some of the games seemed fairly simple, not requiring the full memory available in the Dragon, I felt it was a pity that a number of games were not merged into fewer separate programs, to be called up from a menu entry. This would have avoided frustration whilst the favourite game was found on the tape, or while each was separately loaded. From Shard Software of Brentwood, Essex, at £6.75.

- **Getting started** 10
- **Value** 6
- **Playability** 8

ALIENS WILL GET YOU IN THE END SPACE SKIPPER!

PARSEC

If you enjoyed Scramble then you'll love Parsec from Texas Instruments for the TI 99/4a computer. It's an all action scrolling game on a solid state cartridge with 16 skill levels which should satisfy even the most demanding Scramble ace. And it talks to you!

You control the Parsec patrol ship and are confronted by a series of nasty aliens — all of which want to do you harm in the worse possible way.

You blast away at the aliens as they swoop past — and some of them have the audacity to actually shoot back at you!

There are six types of aliens, ranging from the relatively harmless Swoopers to the really hateful Bynites, with a few Saucers thrown in along the way for good measure.

Once you have wiped out all waves of the alien ships — no easy task this — then you must face the dangers of an asteroid belt. You must blast a path through with your overworked laser cannon. Oh yes, a nice touch is the overload factor on your laser weapon. Should you think you can fire away with gay abandon then you've got a nasty shock coming. The cannon can overheat and destroy your craft as certainly as any alien missile.

Then there's that synthesised voice which warns you of attacking ships or when your fuel is running low. The warning often comes in handy during the more difficult levels of the game — especially when your joystick hand starts to seize-up on the rather uncomfortable Texas joysticks. However the game will work without the speech box.

Talking about refuelling. This is done by guiding your ship through a refuelling tunnel on the planet's surface.

Second level play is similar to the first except that alien ships have to be hit twice to be destroyed. Also in level two the Bynite ships become invisible when hit once — but continue to fire at you until you succeed in hitting them again. The voice box comes in useful here too — it tells you when a laser blast has hit the target!

Things get faster and more furious as you progress through the different levels making Parsec a challenging space shoot out. The game will be available at Texas dealers and will cost £31.00

- **Loading** 10
- **Value** 7
- **Playability** 8

Illustration: Dorian Cross

INTRODUCING THE BUG HUNTER

NEXT

There are times when computer magazines lose sight of their main objectives.

Here at C&VG we have been guilty, more than once, of making things difficult for our readers. Texas owners who struggled with Pompeii and Ski-ing will testify to the problems they faced in reading the listings on a far from suitable background.

We're full of good intentions but occasionally we get caught out and then the letters from you ever-alert readers flood in to tell us.

What you needed, we decided was a reader on the inside. Someone who could watch over us and make sure that we didn't transgress.

As of next month Robert Schifreen takes up that post. Robert has been a reader since day one and is not going to be slow to take us to task when things go wrong.

Robert has sifted through our July programs with a magnifying glass, double-checking our reviewers' comments, and has pronounced them free from bugs — Snag Junior was caught sneaking in one and quickly chased out!

But, from experience we know that the Bugs will be doing their utmost to get back in and to this end we are giving Robert a regular page.

Our August issue starts the Bug Hunter column. Robert will be in residence each month, giving tips on the games, telling you where *we* fouled up.

Help is only a letter away if you are having difficulties with a program. And should you have a strong idea for some machine advice you would like us to print, then write to Robert and he'll do his best to find out himself or commission an article from an expert.

Now you readers have got a man on the inside, you should really be able to keep us on our toes. Make good use of Bug Hunter and read his first column next issue.



Laser disc technology has found its way into the arcades with Astron Belt from Sega.

If you are not familiar with the ideas behind laser disc games, it involves using real film on a laser disc and a computer which switches to the part of the film which corresponds with the player's actions.

So if he has just shot an alien fighter craft, the piece of film showing the craft exploding is flashed onto the screen.

The arcade industry is predicting that laser disc games are likely to pave the way into the future. But costs have still got to be brought down and teething problems sorted out.

Next month we check out Astron Belt in Arcade Action and find out what you can expect for your 40p.



As *grand* prizes go we've got one which is five times *grander* than most.

We are running a summer programming competition with £5,000 up for the first prize.

Birmingham's Calisto Software are behind the competition as they are trying to search out some homespun programming talent and everyone who enters could be a winner, ending up with a software contract for their game.

We launch the game in the August issue and you will have three months to come up with your winner and send it in.

The first prize will be presented at the November Brainwave consumer electronics exhibition. The competition is free to enter and open to anyone.

All the details plus that all-important entry form can be found in next month's C&VG so, if you think you've got a winning game in you, make sure you get hold of an early copy.

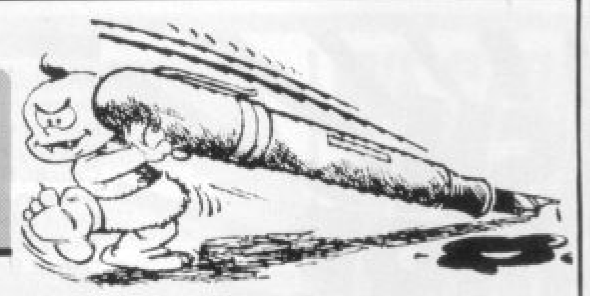


This august journal has some high hopes for its August issue and to that end we have managed to fill it with sparkling gems on the programming front.

Pat Norris is back for Spectrum owners with an interstellar warfare game called Space War for the tactically-minded among you.

One of the most original arcade-type games we've ever seen has come in on the Vic-20. Brick-up involves the player in surrounding and bricking in a particularly deadly variety of alien. It's fast and

MONTH



difficult and very addictive.

Sharp owners will be able to renew their aquaintance with Fred the Repairman. This time Fred is faced with faster sparks in the microchip he is repairing... but he is armed and ready for action.

There's a marvellous game called Ladder Maze and Galactic Landers and a breath of country air with Fox and Hound. Will you be able to outwit Farmer Brown's faithful hound?

Then there's Bug Battle, an insect invasion for Atom owners. But don't rely on the fly spray — these bugs are really mean!

All-in-all we're hoping to get the summer holidays off to a warm start, so dust off the computer and get ready for action.

Confessions of a Bug

We were only entering into the spirit of the thing after all.

But no matter, Oric owners weren't impressed. It was T. Hitch's idea anyway to add a few little snake-like creatures to the Oric listing last month but we upset a few people.

The little snakes on the listing should not be there at all. In line 30 turn the snake squiggle into a closed quotes and ignore those at the top of the listing.

Yours Mal.

COMPUTER GAMES TOP TEN

Sinclair Spectrum

1 Flight Simulation (Psion)
2 Hobbit (Melbourne House)
3 Penetrator (Melbourne House)
4 Transylvania Tower (Dk Shp)
5 3D Tanx (DK Tronics)
6 Horace Goes Skiing (Psion)
7 Sentinel (Abacus)
8 Galaxians (Artic)
9 3D Escape (New Generation)
10 Chess (Psion)

Atari 400/800

1 Defender (Atari)
2 PacMan (Atari)
3 Galaxians (Atari)
4 Zaxxon
5 Qix (Atari)
6 Miner 2049'er
7 Centipede (Atari)
8 Astro Chase
9 Preppie
10 Floyd of the Jungle

Vic 20

1 Panic (Bug Byte)
2 Alien Blitz (Audigenic)
3 Asteroids (Bug Byte)
4 Arcadia (Imagine)
5 Cosmiads (Bug Byte)
6 Wacky Waiters (Imagine)
7 Blitz (Commodore)
8 Alien Blitz (Audiogenic)
9 Skramble (Rabbit)
10 Choplifter (Audiogenic)

ZX-81

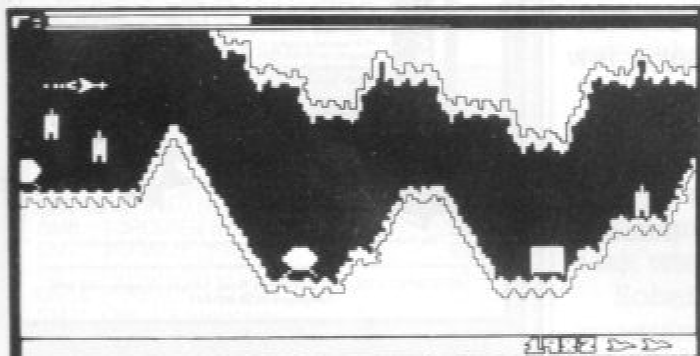
1 Flight Simulation (Psion)
2 QS Scramble (Quicksilva)
3 Monster Maze (New Gn)
4 Galaxians (Artic)
5 Space Raiders (Psion)
6 Chess (Psion)
7 Nightgunner (Digital Int)
8 Avenger (Abacus)
9 Asteroids (Silversoft)
10 Mazogs (Bug Byte)



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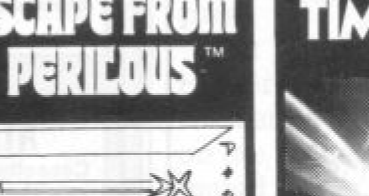
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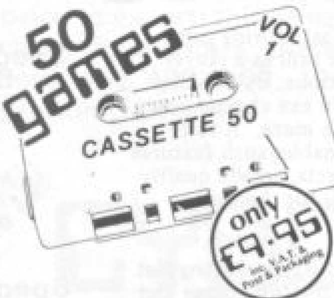
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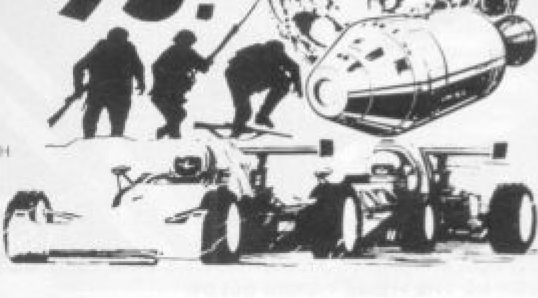
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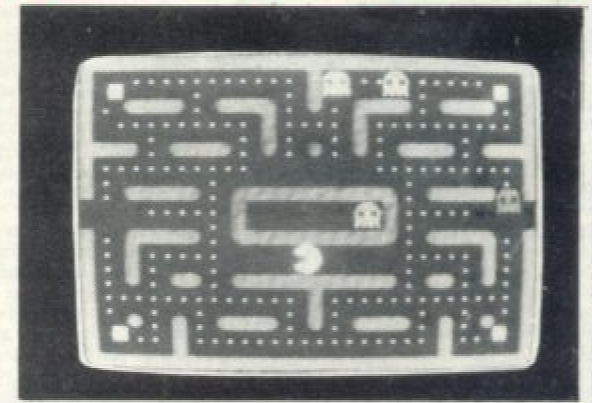
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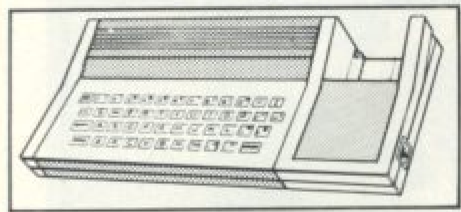
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HOME COMPUTERS

AQUARIUS



AQUARIUS: The brand new Aquarius Personal Computer is part of Mattel Electronics latest developments in advanced technology and offers full home computing facilities, as well as extensive game play, using a very wide range of plug in cartridges. Since Aquarius is a Mattel Electronics product, it benefits by the company's wide experience of producing high technology equipment, as well as their game programming expertise which is evident from the advanced games which have been produced for the Intellivision. Aquarius costs £79 and comes with microsoft basic built in. It is so simple to use that you'll be writing your first programs within minutes of taking the machine out of its box. You can even record the programs on your own cassette recorder at home, so you can use them again at a later date. Most available domestic tape recorders are compatible with the Aquarius.

A POWERFUL MACHINE: For all its simplicity, it is also very sophisticated. It has a Z80A processor and 8K of built in ROM as well as 4K of RAM, which is user expandable to 52K. It has a display of 40x 24 characters, and a graphic resolution of 320x192 with a total character set of 256 (including the complete ASCII set with upper and lower case letters, numbers and additional graphic symbols). The keyboard has 49 full stroke moving keys, unlike some of the cheaper machines which have membrane keyboards. The size of the machine (excluding any of the additional peripherals), is 13"x6"x2".

PERIPHERALS: It is very easy to increase the capabilities of your Aquarius as all the peripherals plug straight into one another. You can add a Printer, a Modem, a Data Recorder, Mini Expander and other items. All of the peripherals are very easy to install and what is more, they're easy to use. But the best news of all is, they're easy to afford.

CPM OPERATING CAPABILITY: The Aquarius is capable of being expanded to 52K RAM and later in 1983 a disk drive will be available for it, with the commercial CPM business operating system. This will allow you access to one of the largest software libraries in the world, with literally hundreds of programs available for you to use.

CARTRIDGES: Various sophisticated programs will be launched on plug in cartridges such as a Visicalc type spreadsheet and a word processor. In addition there will be dozens of games and utilities and alternative languages such as Logo, which combined with the built in microsoft basic gives an unbeatable combination of high quality programming ability.

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SPECIFICATIONS: Both the Atari 400 and 800 can display in up to 16 colours, each with 16 intensities. They have four independent sound synthesizers for music tunes/game sounds, giving four octaves with variable volume and tone control on your T.V.'s speaker. The display graphics are of amazing quality, having a detailed resolution of 320 x192, comprising 24 lines of 40 characters. Atari personal computers have a standard 10K ROM operating system. In addition the standard Atari 400 (£149) comes with 16K of RAM, and the expanded version with 48K (£198). The Atari 800 (£299) comes with 48K as standard. Both the 400 and 800 are now supplied with a FREE £40 Basic Programming Kit, which includes the Basic Programming Cartridge, as well as a 120 page Basic Reference Manual and the 184 page Self Teaching Manual by Bill Carris called 'Inside Atari Basic', so you can begin programming straight away, without buying any 'extras'. Even a mains plug is supplied!

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VIDEO GAMES

COLECOVISION



THE SYSTEM: The CBS Colecovision offers new standards in video game play. The excellent graphics are well implemented with arcade titles such as Zaxxon, Lady Bug, Gorf, Wizard of Wor, Carnival, Mouse Trap and the lovable Smurfs. The console comes supplied with a three screen arcade quality version of DONKEY KONG. Parker and other companies have also announced ranges of cartridges for Colecovision, to further enhance the wide range of quality titles available for this new television games machine.

THE CONSOLE: The CBS Colecovision video games system has advanced technology which produces superlative graphics resolution and excellent sound effects. The styling of the console and hand controllers has been carefully researched; the console is designed to complement modern hi-tech equipment, and has clear features for easy operation. The hand controllers allow fingertip control via the 8 direction joystick, and feature 2 independent fire buttons. The push button keyboard is used for game selection and for game control with some cartridges. The hand controllers are detachable and are connected to six feet of telephone coil cable, storing neatly away in the console when not in use.

ATARI EXPANSION MODULE: The Atari converter module allows Atari VCS software cartridges to be played on the Colecovision console, allowing owners the freedom to purchase from the extensive range of Atari compatible cartridges. It also means that existing Atari owners can buy the CBS Colecovision games system without discarding their software library. Silica Shop offer part exchange facilities if you wish to upgrade.

TURBO EXPANSION MODULE: The Turbo Driver Expansion Module allows you to actually drive the vehicle that appears on your T.V. screen. The module consists of a steering wheel, dashboard and accelerator pedal. One hand controller is mounted on the dashboard to provide a gear change unit. The module comes complete with a Turbo Driver cartridge, the first of several cartridges to make use of the module, which provides all the action of sitting in the driving seat. This facility is unique to CBS Colecovision.

HOME COMPUTER EXPANSION MODULE: The Home Computer Module scheduled for late 1983, allows conversion of the games unit into a sophisticated Home Computer. This flexibility of design is an important feature of the CBS Colecovision System.

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VECTREX



THE SYSTEM: Vectrex is a totally unique Home Arcade System, which has been exclusively designed and engineered to duplicate real arcade game play. Complete with its own monitor display, Vectrex won't cause any arguments over the use of the family's television because it has its own built in screen.

THE SCREEN: Vectrex does not use ordinary display techniques, instead it uses vector scanning to control the images on the screen. With this scanning method, the gun only updates the area of the screen that has changed, whereas a normal T.V. re-transmits the ENTIRE screen 50 times a minute. It is this that gives Vectrex its speed, and means that very little computer power is required for screen control, and the results provide very fast responding and clear images. These 'Vector Graphics' are used in several arcade games such as Asteroids and Battlezone, to give you incredibly high resolution and quality. Vectrex brings all of this from the arcade right into your living room. The Vectrex screen is capable of displaying 80 columns by 40 lines, which is significant to the extensive developments planned for the system.

EXCITING SOUNDS AND ELECTRONICS: Vectrex has an advanced microprocessor with more speed and power and exciting effects than many home video games systems.

REAL ARCADE CONTROLS: Vectrex has a unique control panel, similar to those used in many real arcade games, with 4 concave action buttons and a full 360° self centering joystick. This control panel has a 4 foot detachable cord for maximum player freedom.

REAL ARCADE GRAPHICS: Vectrex has its own 9 inch vertical screen and unlike a conventional T.V. screen, uses advanced display technology to achieve brilliant, high resolution imagery and superb game play never before possible. The Vectrex display provides special effects too, such as 3-D rotation and zooming in and out, which a regular T.V. cannot match. Using a black and white monitor, each Vectrex game comes supplied with its own coloured plastic screen overlay to add to the excitement of game play. The range of Vectrex cartridges (£21.95 each), gives a good selection of arcade games such as Berzerk, Scramble, Rip-Off and Bomber Attack. Vectrex comes complete with a fast paced 'Minestorm' game built into memory.

VECTREX: Vectrex has an advanced state-of-the-art microprocessor with more speed than other T.V. games.

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ATARI

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SILICA ATARI CLUB: Silica Shop has over 20,000 Atari VCS club members registered on our computer. As a specialist company we are able to obtain advance information about new developments and send detailed catalogues to all of our club members, enabling them to evaluate new products before they buy. This is a totally FREE service, to receive your copies complete the coupon below.

SERVICE CENTRE: Atari International (UK) Inc has recently appointed Silica Shop as an authorised Atari Service Centre. This means that we can now service your Atari VCS or 400/800 (under guarantee if applicable), whether or not you purchased it from us.

VCS COMPUTER KEYBOARD: A keyboard will soon be launched to convert the VCS into a fully programmable home computer. For further details, join our club by completing the coupon below. We will then let you know when further information is available.

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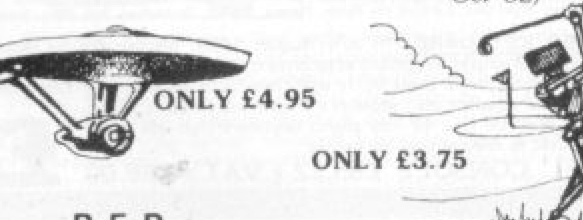
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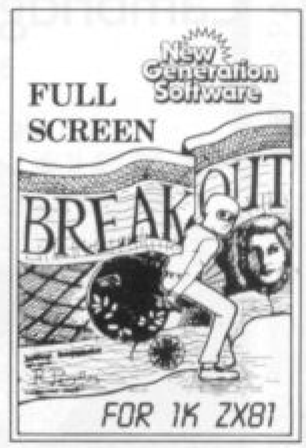
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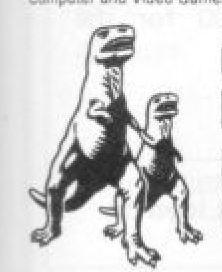


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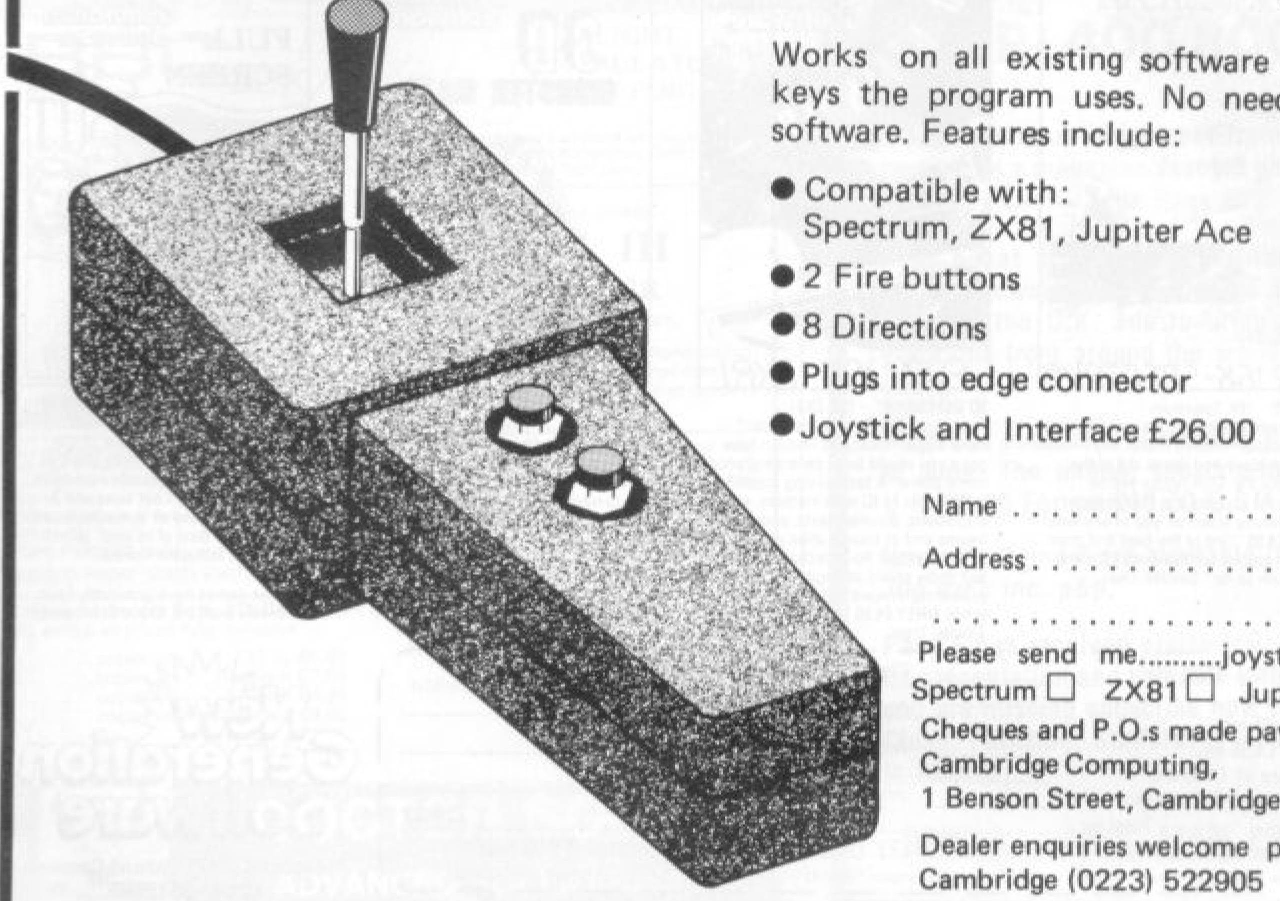
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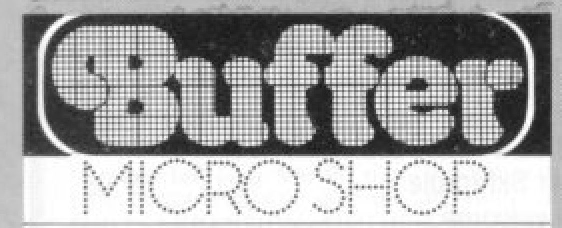
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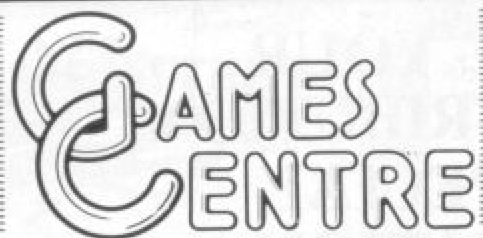
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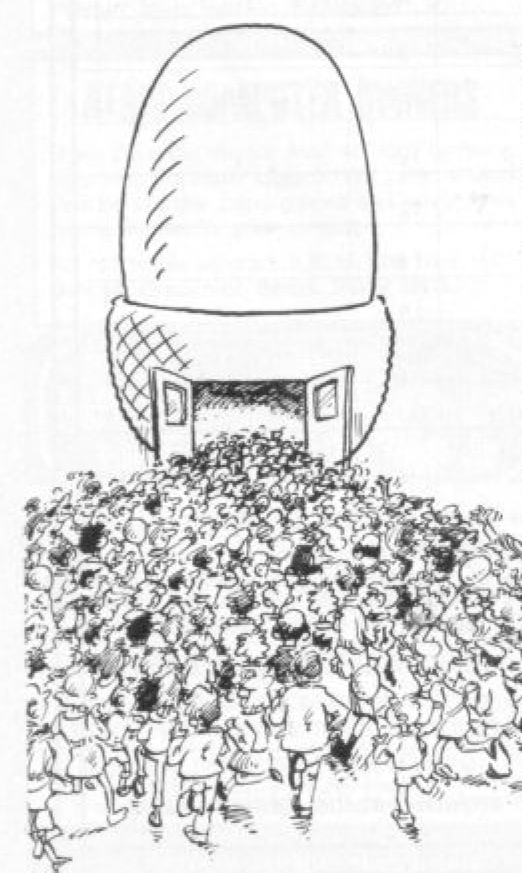
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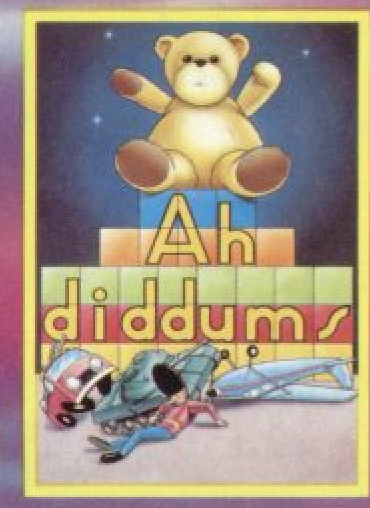
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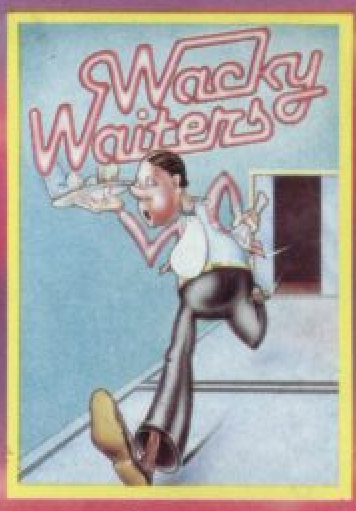
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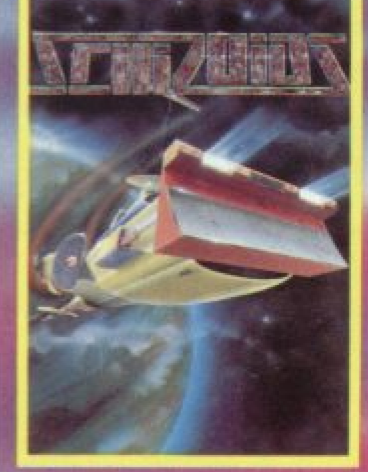
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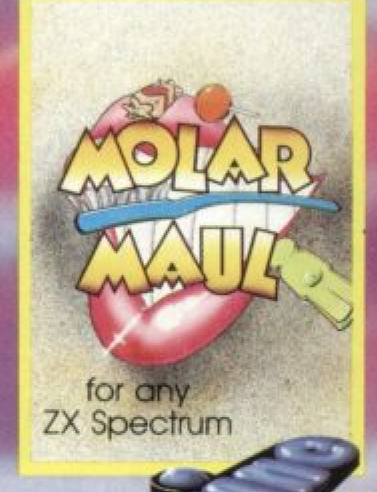
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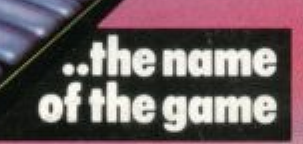
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